THIRD LONG-TERM SOIL VAPOR SAMPLING RESULTS, OCTOBER 1999

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JET PROPULSION LABORATORY
4800 Oak Grove Drive
Pasadena, California 91109

March 2000

THIRD LONG-TERM SOIL VAPOR SAMPLING RESULTS, OCTOBER 1999

AT THE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JET PROPULSION LABORATORY
4800 Oak Grove Drive
Pasadena, California 91109

Prepared by

FOSTER WHEELER ENVIRONMENTAL CORPORATION
611 Anton Boulevard, Suite 800
Costa Mesa, California 92626

March 2000

Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109-8099
(818) 354-4321

JPL

November 2, 2000

Refer to: GEN20001102

NASA Management Office
Attention: Peter Robles
M/S: 180-801
4800 Oak Grove Drive
Pasadena, California 91109

Subject: Long Term Quarterly Soil Vapor Monitoring Reports, Events 1 through 5.

Dear Peter:

Enclosed are 16 copies of each of the subject reports for distribution.

If you have any questions, or need further information, please feel free to contact me at 818-354-0180.

Sincerely,

Charles L. Buril
Environmental Affairs Office – Manager

C. J. Novelly

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

Presented in this report are the results of the third long-term soil vapor sampling event completed as part of the long-term monitoring program being conducted at the NASA-Jet Propulsion Laboratory (JPL) for Operable Unit 2 (OU-2). The purpose of this program is to monitor the horizontal and vertical distributions of volatile organic compound (VOC) vapors in the vadose zone beneath the JPL site. From October 4 to October 11, 1999, Foster Wheeler Environmental Corporation (Foster Wheeler) personnel collected soil-vapor samples from the deep soil vapor monitoring well Nos. 25 through 28 and Nos. 32 through 39 at the locations shown in Figure 1-1.

All soil vapor samples collected during the event were analyzed for VOCs by Transglobal Environmental Geochemistry (TEG) in an on-site laboratory that is certified by the California Department of Health Services (CDHS). The analyses were performed in accordance with EPA Method 8010/8020 and the California Regional Water Quality Control Board, Los Angeles Region (RWQCB), protocols and guidance.

Sampling procedures are described in Section 2.0, and a summary of all VOCs detected during this third long-term soil vapor sampling event, including locations and depths, is contained in Section 3.0. The soil vapor data evaluation report for all samples analyzed during this sampling event is located in Appendix A and summarized in Section 4.0. Cited references are listed in Section 5.0. Laboratory reports for all samples analyzed, along with chain-of-custody forms, are included in Appendix B. The initial three-point calibration data and the daily calibration-verification standards for each day's sampling are also included in this appendix. Appendix C contains a summary of soil-vapor results from all events conducted during the long-term monitoring program.

2.0 SOIL VAPOR SAMPLING PROCEDURES

During October 1999, soil-vapor samples were collected and analyzed from deep soil vapor monitoring well Nos. 25 through 28 and Nos. 32 through 39. A description of how the soil-vapor wells were constructed was presented in a previous report (FWENC, 2000a), and well construction details are summarized in Table 2-1. One hundred and six depth-specific vapor samples, including 17 collocated duplicate samples were collected and analyzed for 25 primary target VOC compounds in accordance with the RWQCB (1997) guidance.

Soil-vapor samples were withdrawn from the soil through the sampling tips and 1/8-inch-outside diameter (OD) Nylaflow® tubing using calibrated, gas-tight, 60-cubic-centimeter (cc) sterile syringes fitted with a three-way on-off valve. Prior to collecting the soil-vapor sample, four volumes of the length of the tubing were purged to flush the tubing and fill it with in-situ soil vapor. Since each foot of tubing has an internal volume of 1 cc, the total volume purged was easily measured with the calibrated syringes. Following purging, a 60-cc soil-vapor sample was collected in the syringe, the valve turned to the off position, and transferred immediately to the on-site mobile laboratory for analysis. During sampling, neither water vapor nor condensation was observed in the transparent sampling syringes. Because the purge and sample volumes were small, a vacuum pump was not required to evacuate the tubing or to collect a soil-vapor sample. To demonstrate reproducibility of results, a duplicate soil-vapor sample was collected and analyzed after every five environmental samples.

Samples collected were analyzed on-site in a mobile laboratory certified (Certification No. 1745) by the CDHS to perform analyses by EPA Methods 8010 and 8020 for the parameters listed in Table 2-2. The time between sample collection and analysis was, at most, only a few minutes.

3.0 ANALYTICAL RESULTS

The results from the Remedial Investigation (RI) for OU-2 indicated that four VOCs were more frequently detected in soil-vapor samples at elevated concentrations relative to other VOCs. These four VOCs are carbon tetrachloride (CCl_4), 1,1,2-trichloro-1,2,2-trifluroroethane (Freon 113), trichloroethene (TCE), and 1,1-dichloroethene (1,1-DCE). Carbon tetrachloride and Freon 113 were detected in most soil-vapor samples where VOCs were present, and often the only VOCs detected. Carbon tetrachloride was usually detected at higher concentrations than Freon 113. The frequency of detection, concentrations, and horizontal and vertical distribution of these four major VOCs are thoroughly discussed and presented in the OU-2 RI report (FWENC, 1999a).

The VOCs most frequently detected during this third long-term sampling event were, as in the past, CCl_4, Freon 113, TCE, and 1,1-DCE. In general, concentrations measured during this event are consistent with those measured during the prior sampling event. Furthermore, many concentrations measured during this event are substantially lower than those measured during the OU-2 RI, probably as a result of the soil vapor extraction pilot test, which was shut down 10 days prior to this sampling event (FWENC, 1999b). Three other VOCs, chloroform, 1,1,1-trichloroethane (1,1,1-TCA), and trichlorofluormethane (Freon 11) were also detected during this sampling event. Chloroform was detected in six soil-vapor wells (Nos. 32, 33, 34, 36, 37, and 38), 1,1,1-TCA was detected in a single well only (No. 36), and Freon 11 was detected in three wells (Nos. 36, 37, and 38). Concentrations of these compounds were generally low relative to those of other compounds detected [chloroform: 1.1 to 15 micrograms per liter of vapor (µg/L-vapor); 1,1,1-TCA: 1.3 to 98 µg/L-vapor; Freon 11: 1.1 to 1.6 µg/L-vapor]. A summary of the analytical results for all samples collected during this sampling event is presented in Table 3-1, and the laboratory reports for each day's sampling are presented in Appendix B-1. Chain-of-custody forms are included in Appendix B-2. Data from all long-term monitoring events conducted to date are summarized in Appendix C.

Locations of detections with depth for CCl_4, Freon 113, TCE, and 1,1-DCE are shown in Figures 3-1, 3-2, 3-3, and 3-4, respectively. Total VOC concentrations with depth are presented in Figure 3-5, and the estimated horizontal and vertical distribution of total VOCs along a section through the north-central part of the site (where VOC concentrations were found to be the highest during the OU-2 RI) is presented in Figure 3-6. Groundwater elevations shown in Figure 3-6 are based on monitoring well water-level information for November 15, 1999, that is contained in the groundwater monitoring report for November-December 1999 (FWENC, 2000b).

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Presented in this section is a brief summary of the quality assurance and quality control (QA/QC) procedures followed during the third long-term soil vapor sampling event. A more thorough discussion on the QA/QC processes and data evaluation are presented in Appendix A, Soil Vapor Data Evaluation Report.

All sample analyses were performed using an external, three-point standard calibration method (Appendix B-3). [For more target analytes, both detectors on the gas chromatograph (GC) were calibrated over a range equivalent to 2 to 150 µg/L analyte in soil vapor.] Analytical system performance was verified at the beginning of each analytical day with an "opening standard" and a "closing standard" after the last environmental sample analysis for the day. A "continuing standard" was analyzed after the tenth environmental sample run that day. If ten or fewer samples were analyzed during the day, the closing standard substituted for the continuing standard. Results of the daily opening, closing, and continuing (if applicable) standards are presented in Appendix B-4.

During each analytical day, the environmental sample analyses were bracketed by check standards which verified acceptable system performance for the analytes listed in the daily calibration data summary tables (Appendix B-4). Response factors (RF) calculated from the opening standard results were within ±15 percent of the mean calibration factors calculated from initial calibration results (±25 percent difference allowed for Freons 11, 12, 113, chloroethane, and vinyl chloride.) Results for closing standards and continuing standards were within ±20 percent of initial calibration results (±30 percent difference allowed for Freons 11, 12, 113, chloroethane, and vinyl chloride.). Therefore, no data were qualified because of standardization problems or instrumental drift. Percent differences between analyte-specific response factors were always within applicable control limits.

Field blanks of ambient air from inside the field laboratory trailer were analyzed immediately after the opening verification standard and were clean in all cases. No matrix spikes or laboratory replicates were required, although some of the samples were reanalyzed at smaller injection volumes so that the instrument response (in terms of area counts) fell within the working calibration range of the GC.

Three surrogate compounds (1,4-difluorobenzene, chlorobenzene, and 4-bromofluorobenzene) were injected into the GC along with the environmental samples as a QA/QC check on recovery limits. In accordance with RWQCB (1997) protocols, surrogate recoveries should be in the range of 75 to 125 percent. All surrogate recoveries obtained during this sampling event satisfied this criteria by a wide margin, usually within a recovery range of 85 to 115 percent.

No sample analysis data obtained during this sampling event were rejected as unusable. Overall, the assessment of soil vapor and corresponding control sample data indicate that data quality objectives were achieved in terms of precision, accuracy, representativeness, comparability, and completeness for all analytes sampled.

5.0 REFERENCES

1. FWENC (Foster Wheeler Environmental Corporation). 1999a. *Final Remedial Investigation Report for Operable Unit 2: Potential On-Site Contaminant Source Areas.* Volume 1. November.

2. FWENC (Foster Wheeler Environmental Corporation). 1999b. *Draft Feasibility Study Report for Operable Unit 2: Potential On-Site Contaminant Source Areas.* November.

3. FWENC (Foster Wheeler Environmental Corporation). 2000a. *First Long-Term Soil-Vapor Sampling Results, October 1998.* February.

4. FWENC (Foster Wheeler Environmental Corporation). 2000b. *Quarterly Groundwater Monitoring Results, November-December 1999.* March.

5. RWQCB (California Regional Water Quality Control Board, Los Angeles Region). 1997. *Interim Guidance for Active Soil Gas Investigation.* February 25.

TABLES

TABLE 2-1

SUMMARY OF CONSTRUCTION DETAILS FOR DEEP SOIL VAPOR MONITORING WELLS

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
25	3/31/97	3/31/97	Sonic	202	1	20	1199.6	1179.6
					2	40		1159.6
					3	60		1139.6
					4	85		1114.6
					5	100		1099.6
					6	120		1079.6
					7	145		1054.6
					8	165		1034.6
					9	180		1019.6
					10	190		1009.6
26	3/27/97	3/28/97	Sonic	206	1	20	1201.8	1181.8
					2	35		1166.8
					3	55		1146.8
					4	80		1121.8
					5	100		1101.8
					6	115		1086.8
					7	140		1061.8
					8	160		1041.8
					9	180		1021.8
					10	195		1006.8
27	3/18/97	3/18/97	Sonic	214	1	20	1214.2	1194.2
					2	35		1179.2
					3	60		1154.2
					4	85		1129.2
					5	100		1114.2
					6	120		1094.2
					7	140		1074.2
					8	160		1054.2
					9	180		1034.2
					10	205		1009.2

TABLE 2-1

SUMMARY OF CONSTRUCTION DETAILS FOR DEEP SOIL VAPOR MONITORING WELLS

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
28	3/13/97	3/14/97	Sonic	179	1	20	1176.7	1156.7
					2	45		1131.7
					3	65		1111.7
					4	80		1096.7
					5	105		1071.7
					6	120		1056.7
					7	140		1036.7
					8	160		1016.7
32	3/29/98	3/29/98	Sonic	210	1	25	1206.6	1181.6
					2	40		1166.6
					3	55		1151.6
					4	70		1136.6
					5	90		1116.6
					6	115		1091.6
					7	135		1071.6
					8	155		1051.6
					9	180		1026.6
					10	195		1011.6
33	3/31/98	4/1/98	Sonic	213	1	20	1214.0	1194.0
					2	40		1174.0
					3	60		1154.0
					4	85		1129.0
					5	105		1109.0
					6	120		1094.0
					7	140		1074.0
					8	160		1054.0
					9	180		1034.0
					10	200		1014.0

TABLE 2-1

SUMMARY OF CONSTRUCTION DETAILS FOR DEEP SOIL VAPOR MONITORING WELLS

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
34	4/8/98	4/8/98	Sonic	135	1	20	1164.3	1144.3
					2	35		1129.3
					3	50		1114.3
					4	65		1099.3
					5	80		1084.3
					6	95		1069.3
					7	108		1056.3
					8	118		1046.3
35	4/14/98	4/14/98	Sonic	162.5	1	20	1183.2	1163.2
					2	35		1148.2
					3	50		1133.2
					4	60		1123.2
					5	80		1103.2
					6	95		1088.2
					7	110		1073.2
					8	125		1058.2
					9	140		1043.2
					10	155		1028.2
36	3/27/98	3/27/98	Sonic	117	1	20	1232.8	1212.8
					2	35		1197.8
					3	55		1177.8
					4	75		1157.8
					5	92		1140.8
37	4/7/98	4/7/98	Sonic	193	1	25	1195.7	1170.7
					2	40		1155.7
					3	60		1135.7
					4	80		1115.7
					5	100		1095.7
					6	120		1075.7
					7	140		1055.7

TABLE 2-1

SUMMARY OF CONSTRUCTION DETAILS FOR DEEP SOIL VAPOR MONITORING WELLS

Soil-Vapor Well Number	Date Drilling Completed	Date Vapor Well Installed	Drilling Method	Boring Depth (ft bgs)	Sampling Tip Number	Depth to Sampling Tip (ft bgs)	Elevation of Ground Surface (ft amsl)	Elevation of Soil Vapor Sampling Tip (ft amsl)
					8	155		1040.7
					9	170		1025.7
					10	185		1010.7
38	4/15/98	4/15/98	Sonic	178.5	1	25	1185.6	1160.6
					2	45		1140.6
					3	65		1120.6
					4	80		1105.6
					5	95		1090.6
					6	110		1075.6
					7	125		1060.6
					8	140		1045.6
					9	155		1030.6
					10	170		1015.6
39	4/17/98	4/17/98	Sonic	138	1	20	1144.1	1124.1
					2	35		1109.1
					3	50		1094.1
					4	70		1074.1
					5	85		1059.1
					6	100		1044.1
					7	110		1034.1
					8	120		1024.1
					9	130		1014.1

Notes:

amsl – Above mean sea level.
bgs – Below ground surface.
ft – Feet.

TABLE 2-2

SUMMARY OF PRIMARY TARGET COMPOUNDS FOR ANALYSES PERFORMED ON SOIL-VAPOR SAMPLES

Parameter	Method	Container	Maximum Holding Time	Detection Limits
Volatile Organic Compounds	8010/8020	Syringe	15 minutes	
Benzene				1.0 µg/L
Vinyl chloride				1.0 µg/L
Carbon tetrachloride				1.0 µg/L
1,2-Dichloroethane				1.0 µg/L
Trichloroethene				1.0 µg/L
1,1-Dichloroethene				1.0 µg/L
1,1,1-Trichloroethane				1.0 µg/L
Bromomethane				1.0 µg/L
Chloroethane				1.0 µg/L
Chloroform				1.0 µg/L
trans-1,2-Dichloroethene				1.0 µg/L
cis-1,2-Dichloroethene				1.0 µg/L
Dichloromethane				1.0 µg/L
1,1-Dichloroethane				1.0 µg/L
Ethylbenzene				1.0 µg/L
1,1,2-Trichloroethane				1.0 µg/L
1,1,1,2-Tetrachloroethane				1.0 µg/L
1,1,2,2-Tetrachloroethane				1.0 µg/L
Tetrachloroethene				1.0 µg/L
Toluene				1.0 µg/L
m,p-Xylenes				1.0 µg/L
o-Xylene				1.0 µg/L
Trichlorofluoromethane (Freon 11)				1.0 µg/L
Dichlorodifluoromethane (Freon 12)				1.0 µg/L
Trichlorotrifluoroethane (Freon 113)				1.0 µg/L

TABLE 3-1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
25	20	10/4/99	VPSV-749	ND	ND	ND	ND	ND	ND	ND
25	40	10/4/99	VPSV-750	ND	ND	ND	ND	ND	ND	ND
25	60	10/4/99	NS	P	P	P	P	P	P	P
25	85	10/4/99	NS	P	P	P	P	P	P	P
25	100	10/4/99	VPSV-751	ND	ND	ND	ND	ND	ND	ND
25	120	10/4/99	VPSV-752	ND	ND	ND	ND	ND	ND	ND
25	145	10/4/99	VPSV-753	ND	ND	ND	ND	ND	ND	ND
25	145	10/4/99	VPSV-754(DUP)	ND	ND	ND	ND	ND	ND	ND
25	165	10/4/99	NS	P	P	P	P	P	P	P
25	180	10/4/99	VPSV-755	ND	2.2	ND	ND	ND	ND	ND
25	190	10/4/99	VPSV-756	ND	ND	ND	ND	ND	ND	ND
26	20	10/4/99	NS	P	P	P	P	P	P	P
26	35	10/4/99	VPSV-757	10	ND	1.5	ND	ND	ND	ND
26	55	10/4/99	NS	P	P	P	P	P	P	P
26	80	10/4/99	NS	P	P	P	P	P	P	P
26	100	10/4/99	NS	P	P	P	P	P	P	P
26	115	10/4/99	VPSV-758	1.7	ND	ND	ND	ND	ND	ND
26	140	10/4/99	VPSV-759	5.4	ND	1.9	ND	ND	ND	ND
26	140	10/4/99	VPSV-760(DUP)	8.1	ND	1.7	ND	ND	ND	ND
26	160	10/5/99	VPSV-761	5.0	2.2	1.8	ND	ND	ND	ND
26	180	10/5/99	VPSV-762	2.9	3.0	6.5	ND	ND	ND	ND
26	195	10/5/99	NS	P	P	P	P	P	P	P
27	20	10/5/99	VPSV-763	ND	ND	ND	ND	ND	ND	ND
27	35	10/5/99	NS	W	W	W	W	W	W	W
27	60	10/5/99	VPSV-764	ND	2.5	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-765	ND	ND	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-766(DUP)	ND	ND	ND	ND	ND	ND	ND
27	100	10/5/99	VPSV-767	5.2	ND	ND	ND	ND	ND	ND
27	120	10/5/99	VPSV-768	1.3	ND	ND	ND	ND	ND	ND

TABLE 3-1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
27	140	10/5/99	VPSV-769	6.2	1.2	ND	ND	ND	ND	ND
27	160	10/5/99	VPSV-770	ND	ND	ND	ND	ND	ND	ND
27	180	10/5/99	VPSV-771	12	2.1	4.0	ND	ND	ND	ND
27	180	10/5/99	VPSV-772(DUP)	12	1.9	4.5	ND	ND	ND	ND
27	205	10/5/99	VPSV-773	4.8	2.2	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-783	ND	ND	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-784(DUP)	ND	ND	ND	ND	ND	ND	ND
28	45	10/6/99	NS	P	P	P	P	P	P	P
28	65	10/6/99	NS	P	P	P	P	P	P	P
28	80	10/6/99	VPSV-785	ND	ND	ND	ND	ND	ND	ND
28	105	10/6/99	VPSV-786	ND	ND	ND	ND	ND	ND	ND
28	120	10/6/99	NS	P	P	P	P	P	P	P
28	140	10/6/99	NS	P	P	P	P	P	P	P
28	160	10/6/99	NS	P	P	P	P	P	P	P
32	25	10/9/99	VPSV-812	ND	ND	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-813	ND	ND	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-814(DUP)	ND	ND	ND	ND	ND	ND	ND
32	55	10/9/99	VPSV-815	ND	ND	ND	ND	ND	ND	ND
32	70	10/9/99	VPSV-816	ND	3.9	ND	ND	ND	ND	ND
32	90	10/9/99	VPSV-817	ND	ND	ND	ND	ND	ND	ND
32	115	10/9/99	NS	P	P	P	P	P	P	P
32	135	10/9/99	NS	P	P	P	P	P	P	P
32	155	10/9/99	VPSV-818	28	78	ND	ND	ND	ND	ND
32	180	10/9/99	VPSV-819	1.6	ND	ND	ND	ND	ND	ND
32	180	10/9/99	VPSV-820(DUP)	1.7	ND	ND	ND	ND	ND	ND
32	195	10/9/99	VPSV-821	ND	ND	ND	ND	1.5	ND	ND
33	20	10/6/99	VPSV-774	ND	2.3	ND	ND	ND	ND	ND
33	40	10/6/99	VPSV-775	3.7	67	8.9	47	ND	ND	ND
33	60	10/6/99	VPSV-776	6.6	2.4	1.7	4.8	ND	ND	ND

TABLE 3-1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
33	85	10/6/99	VPSV-777	19	4.5	ND	3.3	ND	ND	ND
33	85	10/6/99	VPSV-778(DUP)	22	4.7	ND	3.3	ND	ND	ND
33	105	10/6/99	VPSV-779	38	13	ND	4.4	ND	ND	ND
33	120	10/6/99	VPSV-780	64	17	1.1	4.1	ND	ND	ND
33	140	10/6/99	VPSV-781	8.6	3.3	ND	ND	2.9	ND	ND
33	160	10/6/99	NS	P	P	P	P	P	P	P
33	180	10/6/99	NS	P	P	P	P	P	P	P
33	200	10/6/99	VPSV-782	ND	ND	ND	ND	ND	ND	ND
34	20	10/7/99	VPSV-799	ND	ND	ND	ND	ND	ND	ND
34	35	10/7/99	VPSV-800	ND	ND	ND	ND	ND	ND	ND
34	50	10/5/99	NS	W	W	W	W	W	W	W
34	65	10/8/99	VPSV-801	ND	ND	ND	ND	ND	ND	ND
34	65	10/8/99	VPSV-802(DUP)	ND	ND	ND	ND	ND	ND	ND
34	80	10/8/99	VPSV-803	ND	ND	ND	ND	ND	ND	ND
34	95	10/8/99	VPSV-804	ND	ND	ND	ND	ND	ND	ND
34	108	10/8/99	VPSV-805	8.2	ND	ND	ND	ND	ND	ND
34	118	10/8/99	VPSV-806	52	2.5	ND	1.3	5.1	ND	ND
35	20	10/7/99	VPSV-787	ND	ND	ND	ND	ND	ND	ND
35	35	10/7/99	VPSV-788	ND	ND	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-789	ND	ND	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-791(DUP)	ND	ND	ND	ND	ND	ND	ND
35	60	10/7/99	VPSV-790	ND	ND	ND	ND	ND	ND	ND
35	80	10/7/99	VPSV-792	ND	ND	ND	ND	ND	ND	ND
35	95	10/7/99	VPSV-793	1.6	ND	ND	ND	ND	ND	ND
35	110	10/7/99	VPSV-794	ND	ND	ND	ND	ND	ND	ND
35	125	10/7/99	VPSV-795	ND	1.5	ND	ND	ND	ND	ND
35	125	10/7/99	VPSV-796(DUP)	ND	1.5	ND	ND	ND	ND	ND
35	140	10/7/99	VPSV-797	13	19	3.6	ND	ND	ND	ND
35	155	10/7/99	VPSV-798	13	17	9.0	ND	ND	ND	ND

TABLE 3-1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
36	20	10/8/99	NS	P	P	P	P	P	P	P
36	35	10/8/99	VPSV-807	48	ND	27	2.0	2.6	33	ND
36	35	10/8/99	VPSV-808(DUP)	49	ND	20	2.2	2.2	32	ND
36	55	10/8/99	VPSV-809	153	1.3	61	9.2	1.1	98	ND
36	75	10/8/99	VPSV-810	30	3.9	2.2	2.3	12	7.6	1.2
36	92	10/8/99	VPSV-811	20	5.8	1.4	2.6	15	1.3	ND
37	25	10/9/99	VPSV-822	ND	ND	ND	ND	ND	ND	ND
37	40	10/9/99	VPSV-823	2.1	ND	ND	ND	ND	ND	ND
37	60	10/9/99	VPSV-824	ND	ND	ND	ND	ND	ND	ND
37	80	10/9/99	VPSV-825	1.6	ND	ND	ND	ND	ND	ND
37	80	10/9/99	VPSV-826(DUP)	1.9	ND	ND	ND	ND	ND	ND
37	100	10/9/99	VPSV-827	12	1.8	3.1	ND	1.6	ND	ND
37	120	10/9/99	VPSV-828	19	12	4.0	2.6	3.6	ND	1.6
37	140	10/10/99	VPSV-829	3.0	1.8	ND	1.7	ND	ND	ND
37	155	10/10/99	VPSV-830	6.0	1.5	1.6	ND	ND	ND	ND
37	170	10/10/99	VPSV-831	6.5	2.0	2.3	1.9	ND	ND	1.1
37	170	10/10/99	VPSV-832(DUP)	6.4	2.1	1.9	2.4	ND	ND	1.1
37	185	10/10/99	VPSV-833	7.4	2.8	4.4	1.8	ND	ND	ND
38	25	10/10/99	VPSV-834	ND	ND	ND	ND	ND	ND	ND
38	45	10/10/99	VPSV-835	ND	ND	ND	ND	ND	ND	ND
38	65	10/10/99	VPSV-836	ND	ND	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-837	ND	ND	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-838(DUP)	ND	ND	ND	ND	ND	ND	ND
38	95	10/10/99	NS	W	W	W	W	W	W	W
38	110	10/10/99	VPSV-839	9.3	5.8	1.7	ND	1.7	ND	1.2
38	125	10/10/99	VPSV-840	3.2	3.6	ND	ND	ND	ND	ND
38	140	10/10/99	VPSV-841	6.6	3.4	ND	ND	1.9	ND	1.6
38	155	10/10/99	VPSV-842	6.7	3.6	1.2	1.8	1.1	ND	1.6

TABLE 3-1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

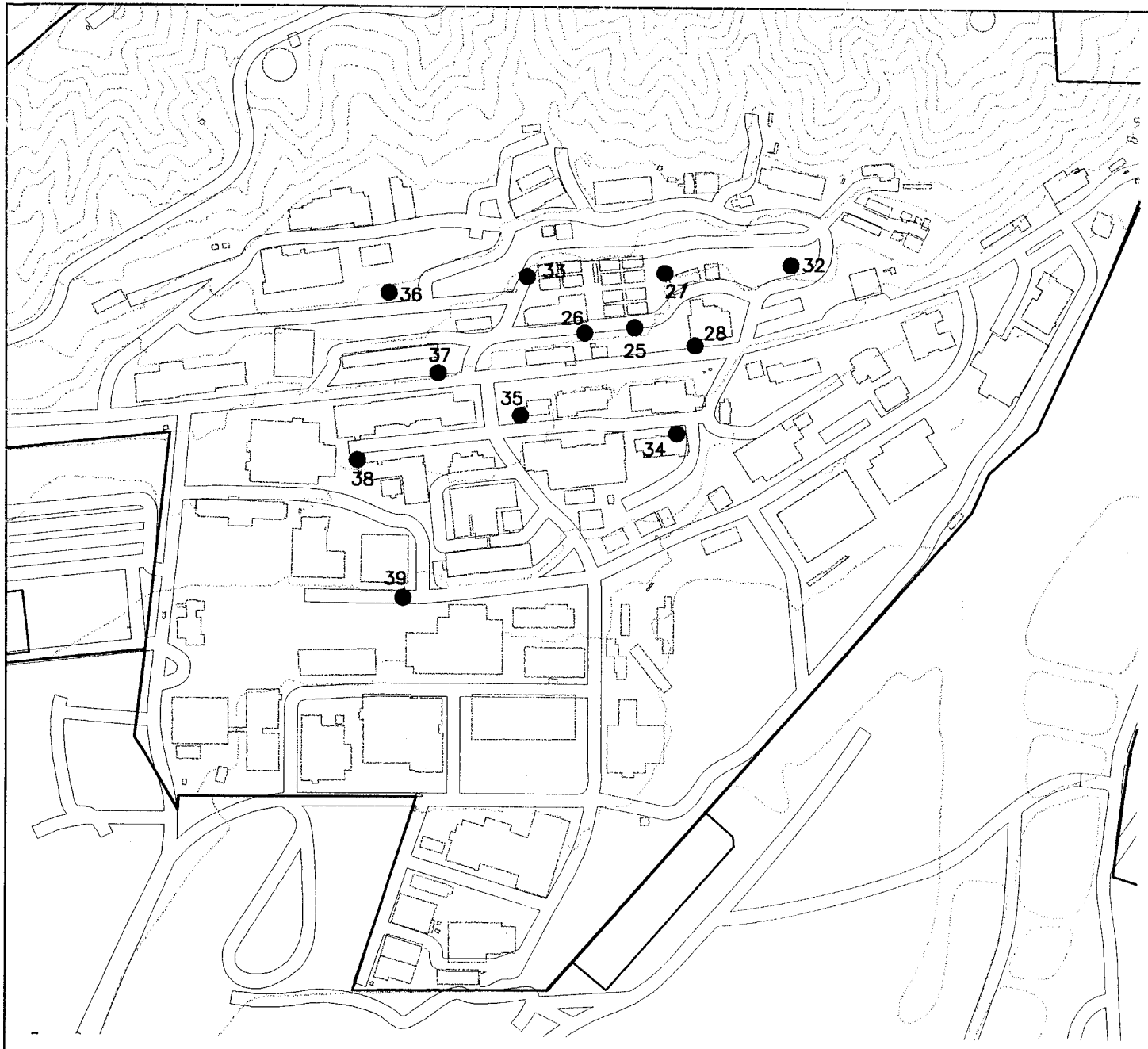
Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
38	170	10/10/99	VPSV-843	8.1	4.9	3.9	1.4	ND	ND	1.1
38	170	10/10/99	VPSV-844(DUP)	5.6	3.5	2.9	1.3	ND	ND	1.1
39	20	10/11/99	VPSV-845	ND	ND	ND	ND	ND	ND	ND
39	35	10/11/99	VPSV-846	ND	ND	ND	ND	ND	ND	ND
39	50	10/11/99	VPSV-847	ND	ND	ND	ND	ND	ND	ND
39	70	10/11/99	VPSV-848	ND	ND	ND	ND	ND	ND	ND
39	85	10/11/99	VPSV-849	6.3	48	1.4	ND	ND	ND	ND
39	85	10/11/99	VPSV-850(DUP)	7.7	47	2.5	ND	ND	ND	ND
39	100	10/11/99	VPSV-851	9.0	46	3.3	ND	ND	ND	ND
39	110	10/11/99	VPSV-852	12	55	3.2	ND	ND	ND	ND
39	120	10/11/99	VPSV-853	4.9	16	17	ND	ND	ND	ND
39	130	10/11/99	VPSV-854	2.0	9.0	15	ND	ND	ND	ND

Notes:

bgs - Below ground surface.
DUP - Duplicate samples.
ft - feet.
ND - Not detected.
NS - Not sampled.
P - Sampling port plugged.
W - Sampling port inundated with water.

FIGURES

I:\1572-JPL\D1 J2\2ND-REPORT\JPLF1-1.DWG
PLOT/UPDATE: FEB 07 2000 16:56:32



Explanation

● 39 Soil Vapor Wells

N

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

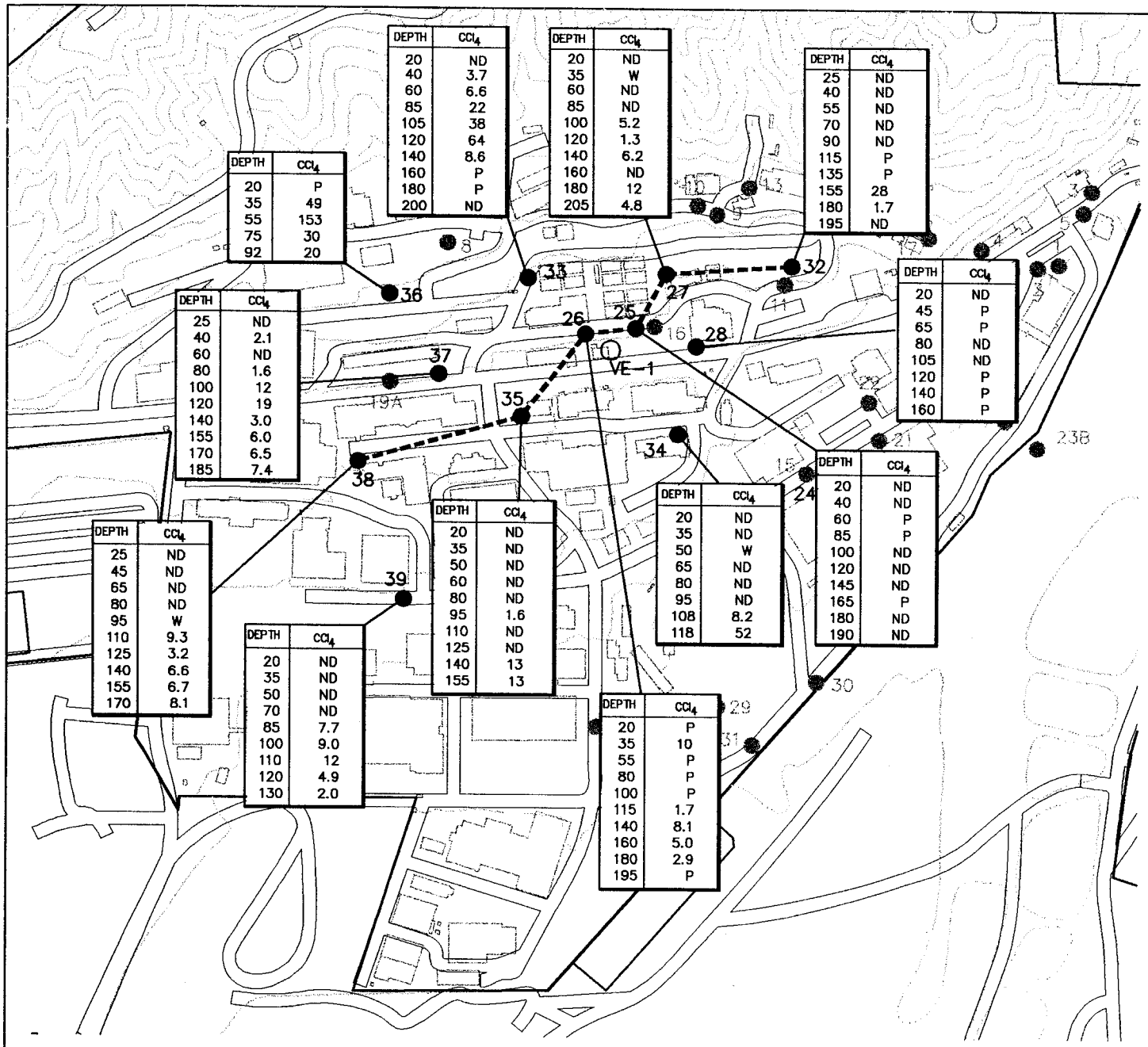
FIGURE 1-1

LOCATIONS OF DEEP SOIL VAPOR MONITORING WELLS SAMPLED

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572-JPL\DW J2\3RD-REPORT\JPLF3-1.DWG
PLOT/UPDATE: MAR 07 2000 15:28:39



Explanation

● 39	Soil Vapor Wells Sampled
○ VE-1	Vapor Extraction Well
CCl_4	Carbon Tetrachloride
ND	Non-Detect @ Laboratory Detection Limit of 1.0 μg/L-Vapor
P	Sample Port Plugged: No Sample Collected
W	Sample Port Waterlogged; No Sample Collected
– – –	Line of Cross Section

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

NOTE:

Concentrations in μg/L-Vapor

FIGURE 3-1

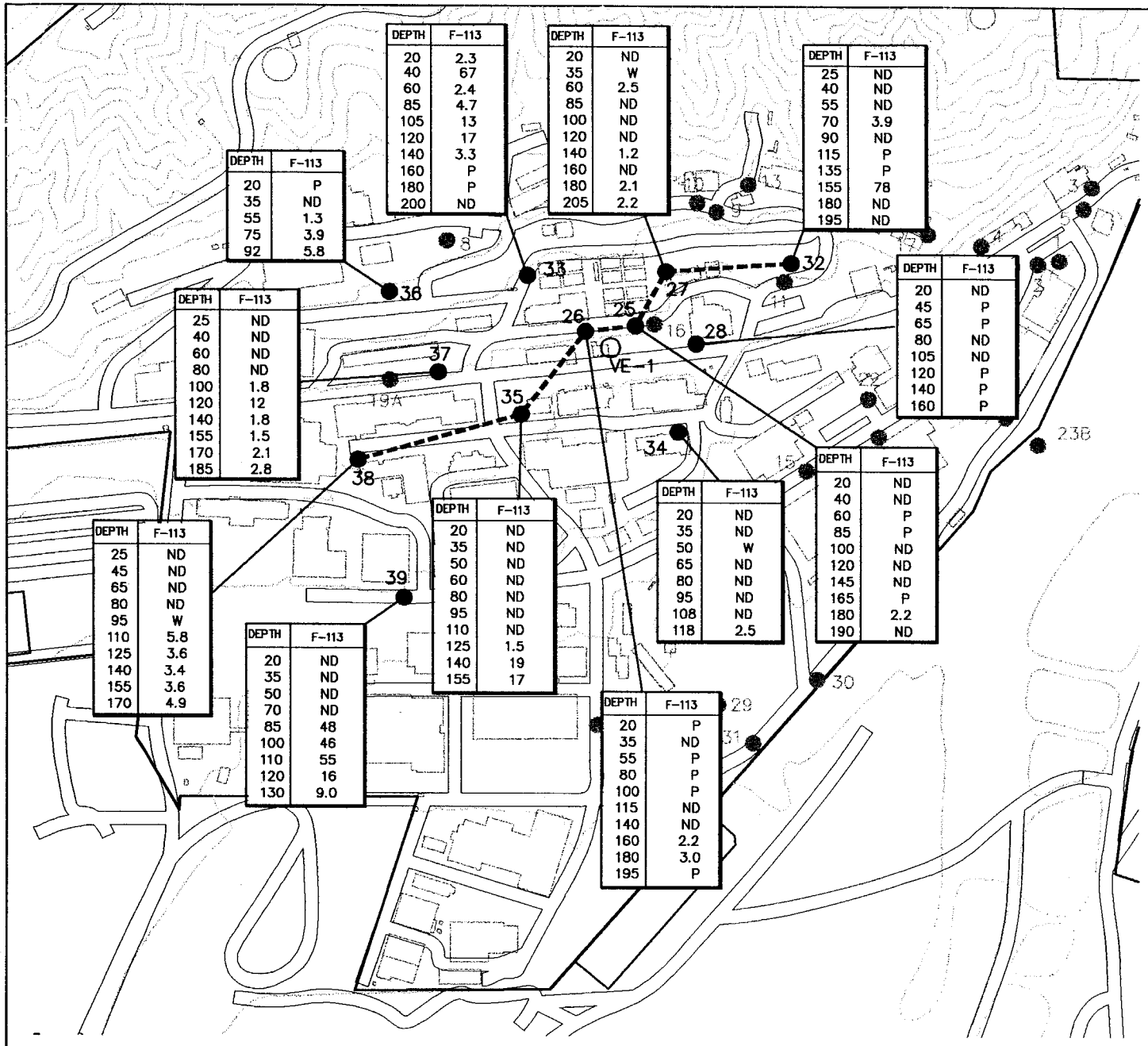
CARBON TETRACHLORIDE CONCENTRATIONS AT DEPTH

MARCH 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572-JPL\DW .2\3RD-REPORT\JPLF3-2.DWG
PLOT/UPDATE: MAR 07 2000 15:34:11



Explanation

● 39	Soil Vapor Wells Sampled
○ VE-1	Vapor Extraction Well
F-113	Freon 113
ND	Non-Detect @ Laboratory Detection Limit of 1.0 μg/L-Vapor
P	Sample Port Plugged: No Sample Collected
W	Sample Port Waterlogged; No Sample Collected
- - -	Line of Cross Section

N

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

NOTE:

Concentrations in μg/L-Vapor

FIGURE 3-2

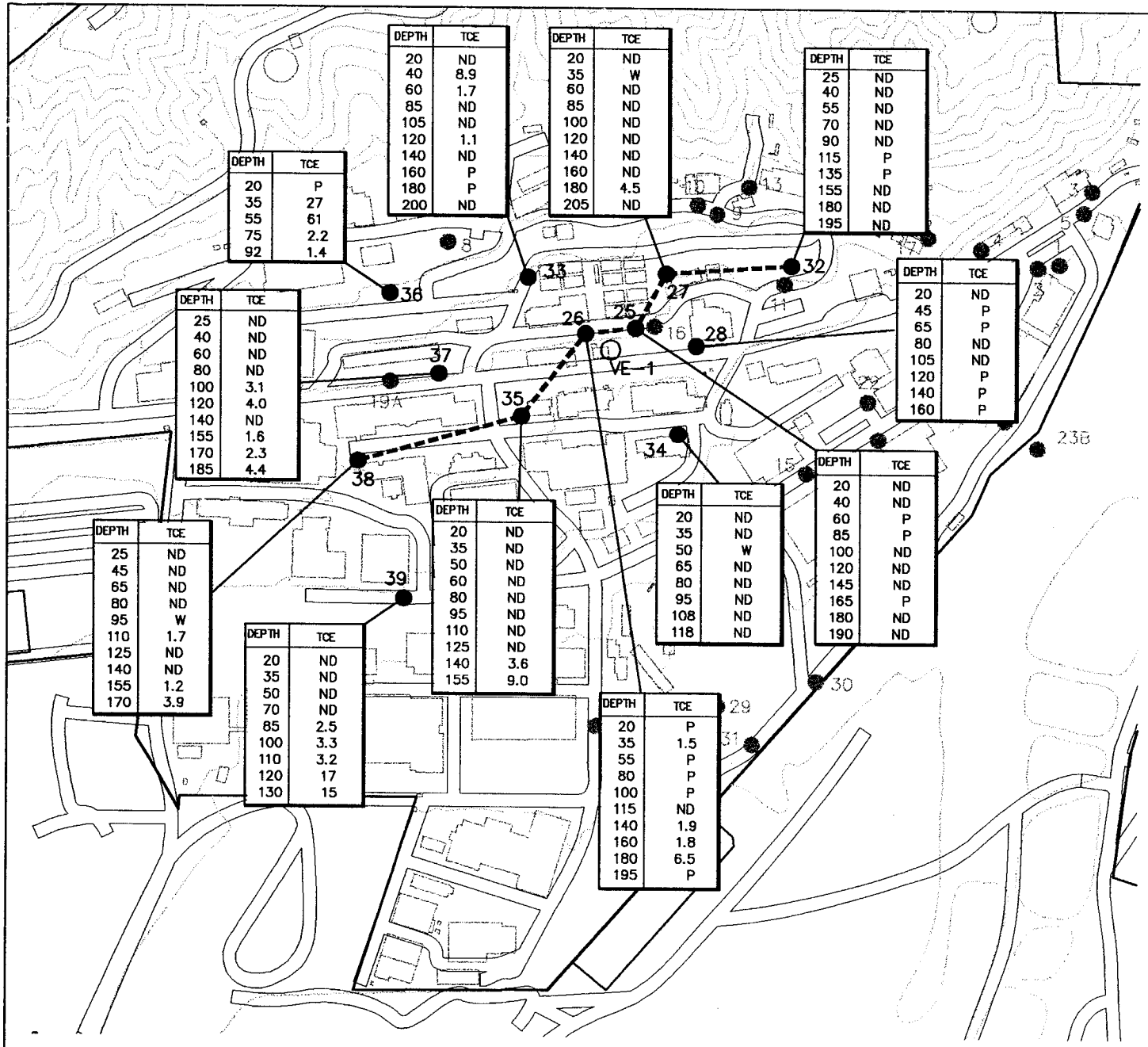
FREON 113 CONCENTRATIONS AT DEPTH

MARCH 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572-JPL\DW[illegible]2\3RD-REPORT\JPLF3-3.DWG
PLOT/UPDATE: FEB 23 2000 15:59:58



Explanation

● 39	Soil Vapor Wells Sampled
○ VE-1	Vapor Extraction Well
TCE	Trichloroethene
ND	Non-Detect @ Laboratory Detection Limit of 1.0 µg/L-Vapor
P	Sample Port Plugged: No Sample Collected
W	Sample Port Waterlogged; No Sample Collected
- - -	Line of Cross Section

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

NOTE:

Concentrations in µg/L-Vapor

FIGURE 3-3

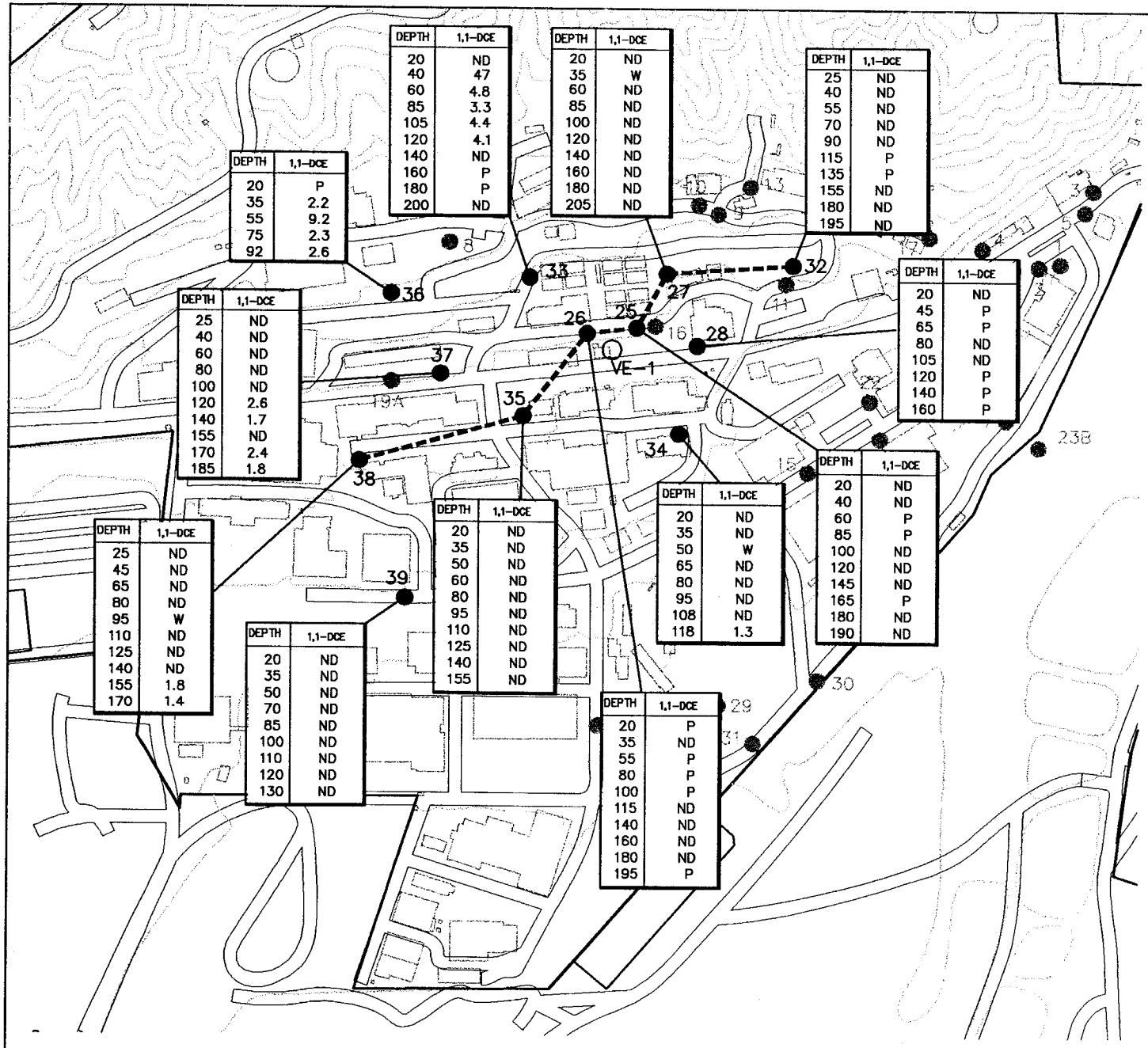
TRICHLOROETHENE CONCENTRATIONS AT DEPTH

MARCH 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572-JPL\DW J2\3RD-REPORT\JPLF3-4.DWG
PLOT/UPDATE: MAR 07 2000 16:01:12



Explanation

● 39	Soil Vapor Wells Sampled
○ VE-1	Vapor Extraction Well
1,1-DCE	1,1-Dichloroethene
ND	Non-Detect @ Laboratory Detection Limit of 1.0 μg/L-Vapor
P	Sample Port Plugged: No Sample Collected
W	Sample Port Waterlogged; No Sample Collected
- - -	Line of Cross Section

N

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

NOTE:

Concentrations in μg/L-Vapor

FIGURE 3-4

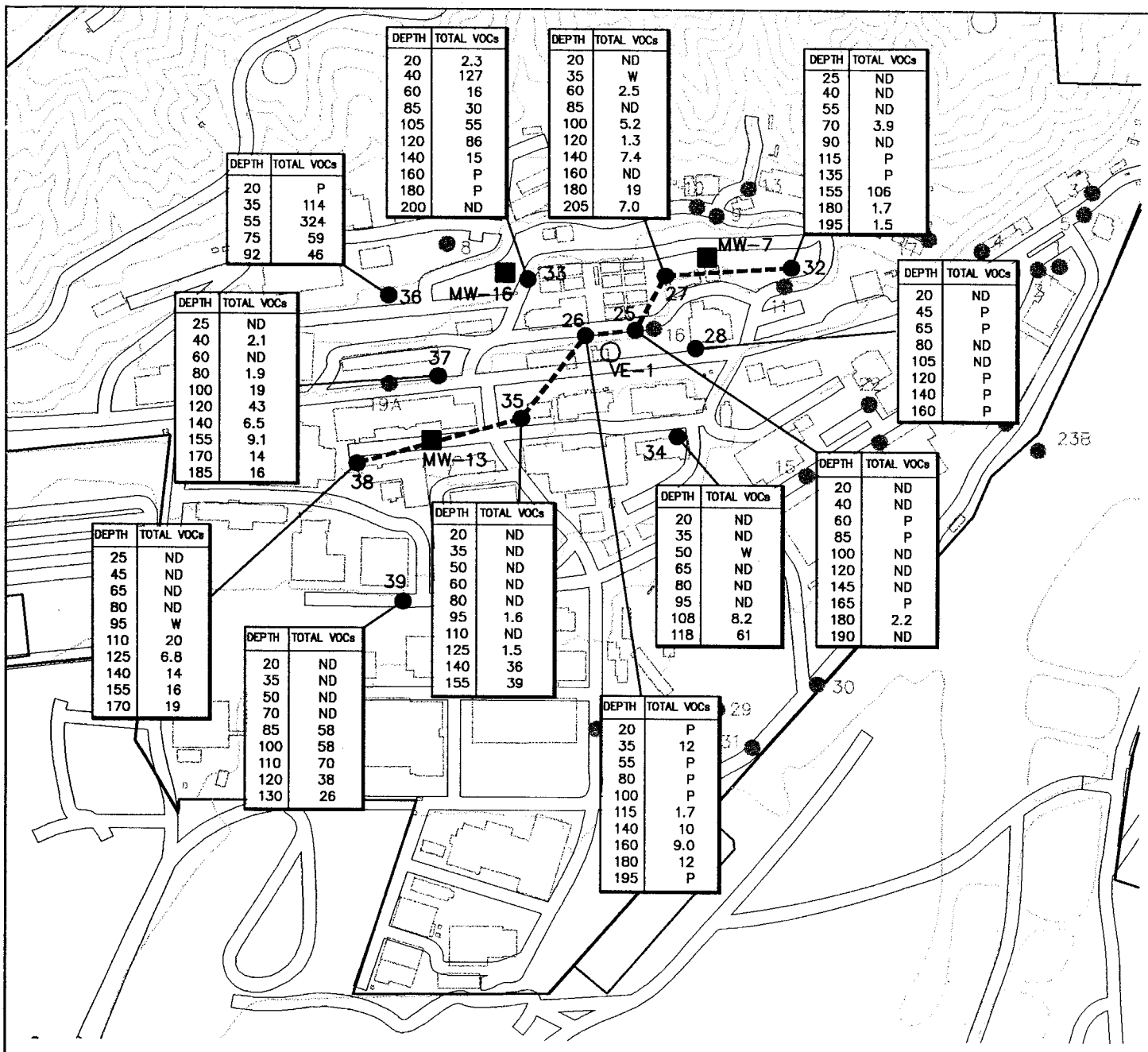
1,1-DICHLOROETHENE CONCENTRATIONS AT DEPTH

MARCH 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572-JPL\DWG 2\3RD-REPORT\JPLF3-5.DWG
PLOT/UPDATE: MAR 07 2000 16:41:39



Explanation

● 39	Soil Vapor Wells Sampled
○ VE-1	Vapor Extraction Well
■ MW-7	Groundwater Monitoring Well
VOCs	Volatile Organic Compounds
ND	Non-Detect @ Laboratory Detection Limit of 1.0 μg/L-Vapor
P	Sample Port Plugged: No Sample Collected
W	Sample Port Waterlogged; No Sample Collected
- - -	Line of Cross Section

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

NOTE:

Concentrations in μg/L-Vapor

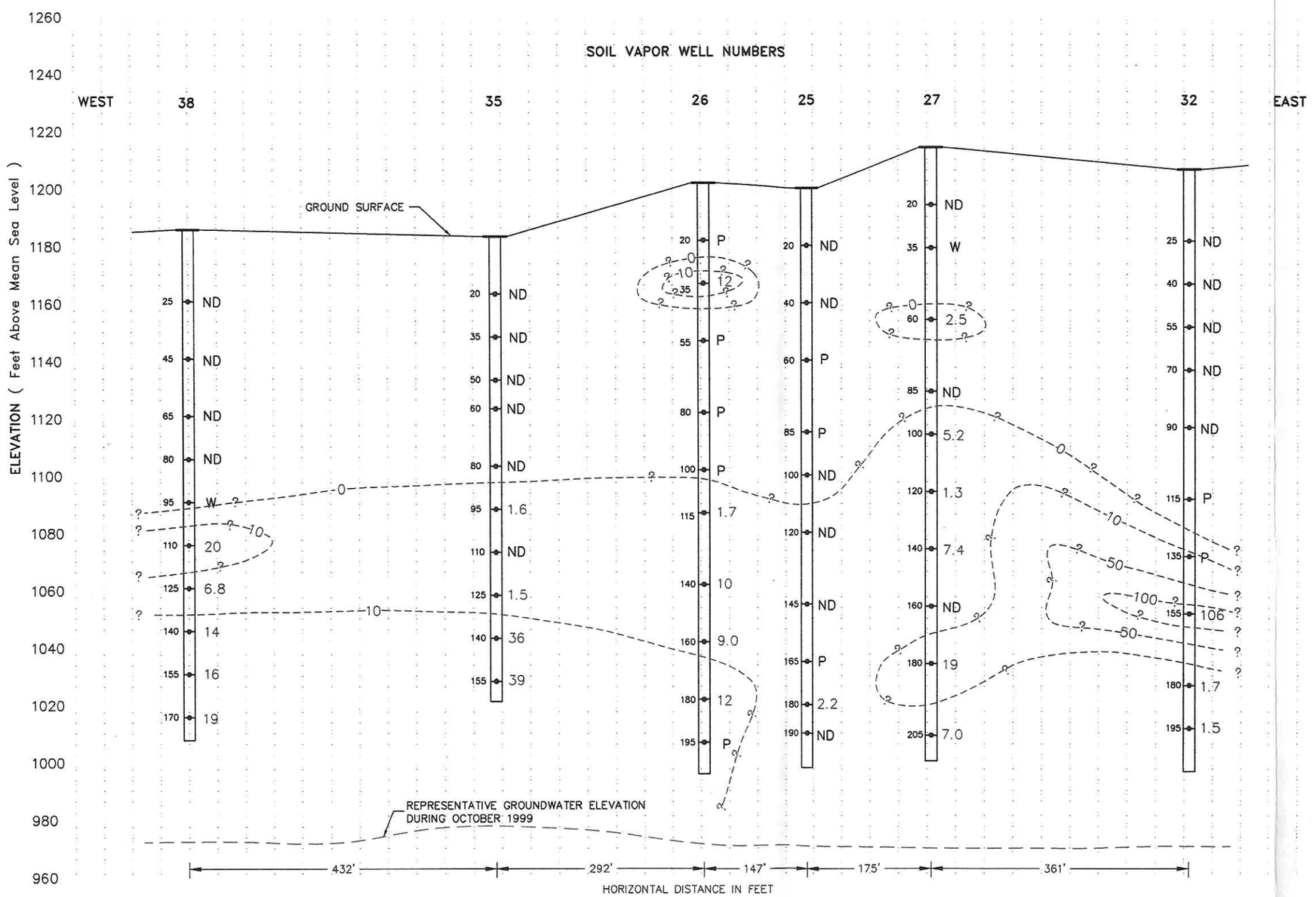
FIGURE 3-5

TOTAL VOC CONCENTRATIONS AT DEPTH

MARCH 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION



Explanation

- 25 Soil Vapor Sample Point and Depth
- 139 Concentrations of Total VOCs (µg/L–Vapor)
- ND Non–Detect @ Laboratory Detection Limit of 1.0 µg/L–Vapor
- P Sample Port Plugged; No Sample Collected
- W Sample Port Waterlogged; No Sample Collected
- VOCs Volatile Organic Compounds

Contours:

1. Intervals in 10, 50 and 100 µg/L–Vapor.
2. Queried where spatial control is lacking.

Note:

Location of cross–section is shown on Figures 3–1 through 3–5.

HORIZONTAL SCALE: 1"=160'

160 80 0 160

VERTICAL SCALE: 1"=40'

40 20 0 40

FIGURE 3–6

REPRESENTATIVE HORIZONTAL AND VERTICAL DISTRIBUTION OF TOTAL VOCs DURING THE THIRD LONG–TERM SOIL VAPOR SAMPLING EVENT
OCTOBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572--JPL\DWG\OU2\3RD--REPORT\SMPLPORT.DWG
PLOT/UPDATE: OCT 24 2000 09:33:16

APPENDIX A

SOIL VAPOR DATA EVALUATION REPORT
THIRD LONG-TERM SAMPLING EVENT

SOIL VAPOR DATA EVALUATION REPORT
THIRD LONG-TERM SAMPLING EVENT

I. INTRODUCTION

Summarized in this report is Foster Wheeler Environmental's review and assessment of the analytical data package generated from on-site gas chromatographic analyses of soil vapor samples that were collected by Foster Wheeler during October 1999 from the JPL site near Pasadena, California. The field sampling and analytical work was performed under a long-term program of soil-vapor collection and testing. On-site analysis for volatile organic compounds (VOCs) was performed by HP Labs (formerly Transglobal Environmental Geochemistry) in their CDHS-certified mobile laboratory by chemist Allen Glover with internal data review conducted by Dr. James Picker. The resulting final data packages were carefully reviewed by Foster Wheeler Environmental's Principal Scientist/Project Chemist who prepared this summary report.

During the period from October 4 to 11 of 1999, the third round of long-term soil vapor monitoring was performed. Twelve Operable Unit 2 (OU-2) deep soil vapor wells (Well Nos. 25 through 28 and Nos. 32 through 39) were sampled. In all, 89 depth-specific vapor samples plus 17 collocated field duplicates, a total of 106 samples, were successfully collected and analyzed. However, at 21 locations, despite repeated efforts to clear the sampling line, no vapor sample could be obtained because of plugged tips on the installed sample probes.

Once collected, each of the 106 samples of soil vapor (VPSV-749 through VPSV-854) was immediately analyzed for a predetermined list of 25 target VOCs. The time between sample collection and analysis was only a few minutes. In addition, at the beginning of each work day, a method/equipment blank was prepared by collecting ambient lab air through the field sampling apparatus. This method blank was run immediately prior to analyzing the environmental samples.

Listed in the attached Table 1 is a summary of the laboratory results for all samples analyzed during this round of long-term soil vapor monitoring. Also included in this table are the corresponding soil vapor well numbers and depths from which each identified vapor sample was collected. This table should provide the reader with sufficient information to determine exactly where each sample was obtained, and also to identify the collocated field duplicate samples (DUP).

II. GUIDELINES USED FOR THIS REVIEW

This data review was performed to assess and evaluate adherence to the QA/QC and reporting requirements contained in the Interim Guidance for Active Soil Gas Investigation, California Regional Water Quality Control Board - Los Angeles Region (February 25, 1997), and general quality control requirements and good laboratory practices contained in the current reference methods for this analysis (8000B and 8021) published in Test Methods for Evaluating Solid

Wastes - Physical/Chemical Methods, SW-846, Office of Solid Waste and Emergency Response, USEPA, Washington, DC, 3rd Edition, September 1986 (including Update III, January 1995). There are some constraints imposed by the nature of any vapor matrix that limit the types of control samples that can be run. Where discrepancies were noted, the potential impact on data reliability is discussed later in the report. As requested, data tables that summarized the laboratory's external calibration and internal control sample results were included in this soil vapor data package. In addition, the package contained copies of individual chromatograms.

III. CHROMATOGRAPHIC PERFORMANCE

All sample analyses were performed using an external, three-point standard calibration method. For most analytes, both Shimadzu gas chromatograph (GC) detectors (Hall and PID) were calibrated over a range equivalent to 2 to 150 micrograms per liter (µg/L) analyte in soil vapor. Analytical system performance was verified at the beginning of each analytical day with an "opening standard," and checked again at the end of the day with a "closing standard." Usually, a "continuing standard" was analyzed after the tenth environmental sample run that day. If only ten (or fewer) environmental samples were analyzed in a day, then the closing standard served as the continuing standard so that, for small sample batches, QC requirements were satisfied without a discreet continuing standard.

Closing and continuing calibration standards were prepared from reference materials derived from a different batch or chemical lot number than the parent standard used to make up the initial calibration curve (generated on October 4) and the daily opening standards. All check standards were made up to the mid-point calibration concentration (equivalent to 20 µg/L vapor). During 8 days of testing, the calibration of HP Labs' Shimadzu analytical system was not altered, updated, or otherwise adjusted.

The initial three-point calibration summary for this data package provides the average analyte-specific calibration factors used to quantify subsequent peak area responses from the field samples. System precision was evaluated in terms of the percent relative standard deviation (%RSD) among calibration factors calculated for each of three standard concentrations (low, mid, and high) for each target analyte. Calibration precision was satisfactory (≤ 20 %RSD) except for chloromethane, whose %RSD was 28.7 percent, and dichlorodifluoromethane (Freon12), whose %RSD was 27.1 percent. However, in the case of Freon 12, the RWQCB guidance for initial calibration allows a maximum %RSD of 30 percent for this compound, and because a chloro-methane QC limit is not specified but chloromethane is a similar gaseous compound, a 30 %RSD precision limit is also applied to the initial chloromethane calibration data. Using these RWQCB guidelines, no calibration discrepancies were noted and no data warranted qualification.

Following the initial calibration regimen, a laboratory control standard (LCS) was analyzed to verify the true concentrations of standard solutions used to prepare the mid-range calibration verification standards. All percent differences (%D) were within the acceptable control range of

±15 percent. However, the lab only quantified 20 compounds (plus surrogates) in their LCS. The RWQCB guidance (Section 3.7.4) states, "The LCS must include all target compounds." Therefore, the one-time calibration verification LCS for this data package is noncompliant in that it does not contain data for the following target analytes: chloroethane/bromomethane, chloromethane, Freons 11 and 12, and vinyl chloride. This procedural discrepancy should be corrected by the lab. No results were qualified based on LCS data, or lack thereof. During each analytical day, the environmental sample analyses were bracketed by check mid-level check standards which verified acceptable system performance for the analytes listed in the QA/QC - Calibration Data Summary Tables. These calibration check standards were prepared from the same standard lot used to make up the initial calibration standards. Calibration factors (CF) calculated from the opening standard results were always within ±15 percent of the mean calibration factors calculated from initial calibration results (±25 percent difference allowed for Freons 11, 12, and 113, chloroethane, and vinyl chloride). Closing standards and calibration verification standards were always within ±20 percent of initial calibration results (±30 percent difference allowed for Freons 11, 12 and 113, chloroethane, and vinyl chloride). Based on these criteria, percent differences (%D) between analyte-specific response factors were always within applicable control limits. Therefore, no data were qualified because of instrumental drift as evaluated from calibration verification data.

Method/equipment blanks were analyzed immediately after the opening verification standard and were clean in all eight cases. Instrument response (in terms of area counts) to the environmental soil vapor samples always fell within the working calibration range of the GC.

In qualitative chromatographic terms such as peak shape, compound separation, stability of instrumental response, baseline appearance, drift and sensitivity, the quality of the chromatograms in these data packages compared favorably with the general criteria for single laboratory performance as published in the method references.

IV. REQUIRED INSTRUMENT QC

Based on general assessment criteria for GC analysis with non-MS detectors, RWQCB guidelines, and requirements in SW-846 - Method 8021, the HP Labs data package was evaluated as follows:

- *Linearity of initial calibration curve*: For all target analytes except chloromethane, the %RSD among response factors calculated from the three calibration standards was less than 20 percent, indicative of a linear relationship. In addition, based on the three-point initial calibration data summary table provided by HP Labs, linear correlation coefficients were greater than 0.995 for all target analytes.
- *Retention time (RT) windows*: Calculation of RT windows is not addressed under RWQCB guidelines. Retention time windows appeared stable and consistent. How acceptable ranges for RT windows were established, and the magnitude of temporal variation allowed was left to the professional judgement of the on-site analytical chemist.

- *Establishment and verification of calibration factors*: Based on initial calibration data, CF values were correctly calculated. Data from calibration verification standards indicated a stable analytical system.

V. MATRIX SPIKE AND LABORATORY CONTROL SAMPLES

The mixed-gas matrix collected from vapor monitoring wells was assumed not significantly to affect method performance in terms of detection limits, precision, and accuracy. No matrix spike data were reported (and none were required) to verify this assumption and no lab replicates were run for internal lab precision assessment. However, data on 17 pairs of field duplicates were generated, and although the variability introduced in the process of sample extraction and collection is typically estimated to be an order of magnitude greater than analytical and reporting variability within the laboratory, some general conclusions about the variability of the data set as a whole can be drawn. For that purpose, the mean relative percent difference (RPD) between individual field duplicate data pairs with detectable concentrations of one or more of the three most commonly detected target analytes, along with other statistical parameters, are summarized in the table below using data expressed as µg/L vapor:

	STATISTICAL PARAMETERS - Field Duplicates			
	Average RPD	Standard Deviation σ	Variance σ^2	Relative Error $\sigma \div$RPD
Carbon Tetrachloride	15.3 %	1.5×10^{-1}	2.2×10^{-2}	0.97
Freon 113	4.8 %	3.6×10^{-2}	1.3×10^{-3}	0.75
Trichloroethene	26.2 %	1.7×10^{-1}	2.8×10^{-2}	0.64

Average RPDs and other statistical parameters compare favorably with the statistical data calculated from previous soil vapor analyses as reported by TEG. In general, there is good agreement (≤ 20 %RPD) between duplicate pairs and good consistency among sampling events. In every case, if any target contaminant was detected in a duplicated vapor sample, the same contaminants were also found in the corresponding field duplicate. The patterns of contamination between field duplicates were identical. This suggests that a reproducibly consistent field sampling procedure is being properly implemented and that data quality objectives for precision and representativeness are consistent with expectations. With 64 to 97 percent relative error, variability within the duplicate data set is not considered excessive for this type of field sampling. It is suspected that this variability is probably not introduced by the laboratory's analytical system, but by the field collection technique which varies the amount of vapor purged from a well as a function of sampling depth, and by interactions between the inside surfaces of the sampling apparatus, entrained moisture, and target analytes present in the vapor phase.

VI. SURROGATE RECOVERIES

An essential requirement of the GC method is that each laboratory calculate in-house performance criteria for evaluating recovery of surrogate compounds by their particular analytical system. In this case, 1,4-difluorobenzene, chlorobenzene, and 4-bromofluorobenzene were employed as surrogates. However, the laboratory did not present any historical performance data with which to establish acceptable in-house surrogate recovery limits. Upper and lower warning and control limit calculations should be completed and included in future data packages. Lacking such data, a range of 75 to 125 percent was applied in accordance with RWQCB guidance (Section 3.10.7).

Day 1: Chlorobenzene surrogate recovered slightly high (137 to 140 percent) in the method blank and first two soil vapor samples: VPSV749-20 and VPSV750-40. Because no analytes were detected in these samples, no results required qualification.

Day 2: Chlorobenzene surrogate recovered slightly high (127 percent) in sample: VPSV762-180. In this case, no data were qualified because: (a) the retention times for detected analytes were not close to chlorobenzene's 18-minute retention time, (b) recoveries for the other two surrogates were within control limits, and (c) the deviation magnitude was small (+2 percent).

Days 3-8: All surrogates recovered within 75 to 125 percent. All recovery data were compliant.

VII. PERFORMANCE CRITERIA

The detection limit was reported at 1 µg/L vapor for all 25 target compounds. Data to support and confirm this limit was not provided, but based on an examination of the chromatograms, analyte peaks were well-defined and resolution among peaks was good.

VIII. SUMMARY OF FINDINGS AND RECOMMENDATIONS

A. The following general comments are offered relative to these data packages:

1. HP Labs complied with Foster Wheeler's request that all data reporting packages include copies of the raw GC data used to generate the initial three-point instrument calibration curves.
2. The one-time initial "calibration verification" LCS should include all 25 target analytes established for this project.
3. The lab should establish and monitor trends in their own specific control limits for surrogate recoveries.
4. In general, there was excellent qualitative agreement in the patterns of groups of compounds (or absence thereof) between field duplicate pairs. When one sample was clean, the other showed no detectable contamination. When target contaminants were detected, identical patterns of compounds were seen in both samples. Agreement between patterns indicates a high degree of precision in the identification

of specific target analytes by the laboratory and also demonstrates that field sampling procedures, equipment design and materials of construction are not introducing significant bias.

B. The following data qualifications should be made when reporting these results:

None.

TABLE 1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
25	20	10/4/99	VPSV-749	ND	ND	ND	ND	ND	ND	ND
25	40	10/4/99	VPSV-750	ND	ND	ND	ND	ND	ND	ND
25	60	10/4/99	NS	P	P	P	P	P	P	P
25	85	10/4/99	NS	P	P	P	P	P	P	P
25	100	10/4/99	VPSV-751	ND	ND	ND	ND	ND	ND	ND
25	120	10/4/99	VPSV-752	ND	ND	ND	ND	ND	ND	ND
25	145	10/4/99	VPSV-753	ND	ND	ND	ND	ND	ND	ND
25	145	10/4/99	VPSV-754(DUP)	ND	ND	ND	ND	ND	ND	ND
25	165	10/4/99	NS	P	P	P	P	P	P	P
25	180	10/4/99	VPSV-755	ND	2.2	ND	ND	ND	ND	ND
25	190	10/4/99	VPSV-756	ND	ND	ND	ND	ND	ND	ND
26	20	10/4/99	NS	P	P	P	P	P	P	P
26	35	10/4/99	VPSV-757	10	ND	1.5	ND	ND	ND	ND
26	55	10/4/99	NS	P	P	P	P	P	P	P
26	80	10/4/99	NS	P	P	P	P	P	P	P
26	100	10/4/99	NS	P	P	P	P	P	P	P
26	115	10/4/99	VPSV-758	1.7	ND	ND	ND	ND	ND	ND
26	140	10/4/99	VPSV-759	5.4	ND	1.9	ND	ND	ND	ND
26	140	10/4/99	VPSV-760(DUP)	8.1	ND	1.7	ND	ND	ND	ND
26	160	10/5/99	VPSV-761	5.0	2.2	1.8	ND	ND	ND	ND
26	180	10/5/99	VPSV-762	2.9	3.0	6.5	ND	ND	ND	ND
26	195	10/5/99	NS	P	P	P	P	P	P	P
27	20	10/5/99	VPSV-763	ND	ND	ND	ND	ND	ND	ND
27	35	10/5/99	NS	W	W	W	W	W	W	W
27	60	10/5/99	VPSV-764	ND	2.5	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-765	ND	ND	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-766(DUP)	ND	ND	ND	ND	ND	ND	ND
27	100	10/5/99	VPSV-767	5.2	ND	ND	ND	ND	ND	ND
27	120	10/5/99	VPSV-768	1.3	ND	ND	ND	ND	ND	ND

TABLE 1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
27	140	10/5/99	VPSV-769	6.2	1.2	ND	ND	ND	ND	ND
27	160	10/5/99	VPSV-770	ND	ND	ND	ND	ND	ND	ND
27	180	10/5/99	VPSV-771	12	2.1	4.0	ND	ND	ND	ND
27	180	10/5/99	VPSV-772(DUP)	12	1.9	4.5	ND	ND	ND	ND
27	205	10/5/99	VPSV-773	4.8	2.2	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-783	ND	ND	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-784(DUP)	ND	ND	ND	ND	ND	ND	ND
28	45	10/6/99	NS	P	P	P	P	P	P	P
28	65	10/6/99	NS	P	P	P	P	P	P	P
28	80	10/6/99	VPSV-785	ND	ND	ND	ND	ND	ND	ND
28	105	10/6/99	VPSV-786	ND	ND	ND	ND	ND	ND	ND
28	120	10/6/99	NS	P	P	P	P	P	P	P
28	140	10/6/99	NS	P	P	P	P	P	P	P
28	160	10/6/99	NS	P	P	P	P	P	P	P
32	25	10/9/99	VPSV-812	ND	ND	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-813	ND	ND	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-814(DUP)	ND	ND	ND	ND	ND	ND	ND
32	55	10/9/99	VPSV-815	ND	ND	ND	ND	ND	ND	ND
32	70	10/9/99	VPSV-816	ND	3.9	ND	ND	ND	ND	ND
32	90	10/9/99	VPSV-817	ND	ND	ND	ND	ND	ND	ND
32	115	10/9/99	NS	P	P	P	P	P	P	P
32	135	10/9/99	NS	P	P	P	P	P	P	P
32	155	10/9/99	VPSV-818	28	78	ND	ND	ND	ND	ND
32	180	10/9/99	VPSV-819	1.6	ND	ND	ND	ND	ND	ND
32	180	10/9/99	VPSV-820(DUP)	1.7	ND	ND	ND	ND	ND	ND
32	195	10/9/99	VPSV-821	ND	ND	ND	ND	1.5	ND	ND
33	20	10/6/99	VPSV-774	ND	2.3	ND	ND	ND	ND	ND
33	40	10/6/99	VPSV-775	3.7	67	8.9	47	ND	ND	ND
33	60	10/6/99	VPSV-776	6.6	2.4	1.7	4.8	ND	ND	ND

TABLE 1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
33	85	10/6/99	VPSV-777	19	4.5	ND	3.3	ND	ND	ND
33	85	10/6/99	VPSV-778(DUP)	22	4.7	ND	3.3	ND	ND	ND
33	105	10/6/99	VPSV-779	38	13	ND	4.4	ND	ND	ND
33	120	10/6/99	VPSV-780	64	17	1.1	4.1	ND	ND	ND
33	140	10/6/99	VPSV-781	8.6	3.3	ND	ND	2.9	ND	ND
33	160	10/6/99	NS	P	P	P	P	P	P	P
33	180	10/6/99	NS	P	P	P	P	P	P	P
33	200	10/6/99	VPSV-782	ND	ND	ND	ND	ND	ND	ND
34	20	10/7/99	VPSV-799	ND	ND	ND	ND	ND	ND	ND
34	35	10/7/99	VPSV-800	ND	ND	ND	ND	ND	ND	ND
34	50	10/5/99	NS	W	W	W	W	W	W	W
34	65	10/8/99	VPSV-801	ND	ND	ND	ND	ND	ND	ND
34	65	10/8/99	VPSV-802(DUP)	ND	ND	ND	ND	ND	ND	ND
34	80	10/8/99	VPSV-803	ND	ND	ND	ND	ND	ND	ND
34	95	10/8/99	VPSV-804	ND	ND	ND	ND	ND	ND	ND
34	108	10/8/99	VPSV-805	8.2	ND	ND	ND	ND	ND	ND
34	118	10/8/99	VPSV-806	52	2.5	ND	1.3	5.1	ND	ND
35	20	10/7/99	VPSV-787	ND	ND	ND	ND	ND	ND	ND
35	35	10/7/99	VPSV-788	ND	ND	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-789	ND	ND	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-791(DUP)	ND	ND	ND	ND	ND	ND	ND
35	60	10/7/99	VPSV-790	ND	ND	ND	ND	ND	ND	ND
35	80	10/7/99	VPSV-792	ND	ND	ND	ND	ND	ND	ND
35	95	10/7/99	VPSV-793	1.6	ND	ND	ND	ND	ND	ND
35	110	10/7/99	VPSV-794	ND	ND	ND	ND	ND	ND	ND
35	125	10/7/99	VPSV-795	ND	1.5	ND	ND	ND	ND	ND
35	125	10/7/99	VPSV-796(DUP)	ND	1.5	ND	ND	ND	ND	ND
35	140	10/7/99	VPSV-797	13	19	3.6	ND	ND	ND	ND
35	155	10/7/99	VPSV-798	13	17	9.0	ND	ND	ND	ND

TABLE 1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
36	20	10/8/99	NS	P	P	P	P	P	P	P
36	35	10/8/99	VPSV-807	48	ND	27	2.0	2.6	33	ND
36	35	10/8/99	VPSV-808(DUP)	49	ND	20	2.2	2.2	32	ND
36	55	10/8/99	VPSV-809	153	1.3	61	9.2	1.1	98	ND
36	75	10/8/99	VPSV-810	30	3.9	2.2	2.3	12	7.6	1.2
36	92	10/8/99	VPSV-811	20	5.8	1.4	2.6	15	1.3	ND
37	25	10/9/99	VPSV-822	ND	ND	ND	ND	ND	ND	ND
37	40	10/9/99	VPSV-823	2.1	ND	ND	ND	ND	ND	ND
37	60	10/9/99	VPSV-824	ND	ND	ND	ND	ND	ND	ND
37	80	10/9/99	VPSV-825	1.6	ND	ND	ND	ND	ND	ND
37	80	10/9/99	VPSV-826(DUP)	1.9	ND	ND	ND	ND	ND	ND
37	100	10/9/99	VPSV-827	12	1.8	3.1	ND	1.6	ND	ND
37	120	10/9/99	VPSV-828	19	12	4.0	2.6	3.6	ND	1.6
37	140	10/10/99	VPSV-829	3.0	1.8	ND	1.7	ND	ND	ND
37	155	10/10/99	VPSV-830	6.0	1.5	1.6	ND	ND	ND	ND
37	170	10/10/99	VPSV-831	6.5	2.0	2.3	1.9	ND	ND	1.1
37	170	10/10/99	VPSV-832(DUP)	6.4	2.1	1.9	2.4	ND	ND	1.1
37	185	10/10/99	VPSV-833	7.4	2.8	4.4	1.8	ND	ND	ND
38	25	10/10/99	VPSV-834	ND	ND	ND	ND	ND	ND	ND
38	45	10/10/99	VPSV-835	ND	ND	ND	ND	ND	ND	ND
38	65	10/10/99	VPSV-836	ND	ND	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-837	ND	ND	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-838(DUP)	ND	ND	ND	ND	ND	ND	ND
38	95	10/10/99	NS	W	W	W	W	W	W	W
38	110	10/10/99	VPSV-839	9.3	5.8	1.7	ND	1.7	ND	1.2
38	125	10/10/99	VPSV-840	3.2	3.6	ND	ND	ND	ND	ND
38	140	10/10/99	VPSV-841	6.6	3.4	ND	ND	1.9	ND	1.6
38	155	10/10/99	VPSV-842	6.7	3.6	1.2	1.8	1.1	ND	1.6

TABLE 1

SUMMARY OF SOIL-VAPOR RESULTS
THIRD LONG-TERM SAMPLING EVENT
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Chloroform	1,1,1-TCA	Freon 11
38	170	10/10/99	VPSV-843	8.1	4.9	3.9	1.4	ND	ND	1.1
38	170	10/10/99	VPSV-844(DUP)	5.6	3.5	2.9	1.3	ND	ND	1.1
39	20	10/11/99	VPSV-845	ND	ND	ND	ND	ND	ND	ND
39	35	10/11/99	VPSV-846	ND	ND	ND	ND	ND	ND	ND
39	50	10/11/99	VPSV-847	ND	ND	ND	ND	ND	ND	ND
39	70	10/11/99	VPSV-848	ND	ND	ND	ND	ND	ND	ND
39	85	10/11/99	VPSV-849	6.3	48	1.4	ND	ND	ND	ND
39	85	10/11/99	VPSV-850(DUP)	7.7	47	2.5	ND	ND	ND	ND
39	100	10/11/99	VPSV-851	9.0	46	3.3	ND	ND	ND	ND
39	110	10/11/99	VPSV-852	12	55	3.2	ND	ND	ND	ND
39	120	10/11/99	VPSV-853	4.9	16	17	ND	ND	ND	ND
39	130	10/11/99	VPSV-854	2.0	9.0	15	ND	ND	ND	ND

Notes:

bgs - Below ground surface.
DUP - Duplicate samples.
ft - feet.
ND - Not detected.
NS - Not sampled.
P - Sampling port plugged.
W - Sampling port inundated with water.

APPENDIX B

B-1 RESULTS OF SOIL-VAPOR ANALYSES

B-2 CHAIN-OF-CUSTODY FORMS

B-3 INITIAL THREE-POINT CALIBRATION DATA

B-4 DAILY OPENING, CLOSING, AND CONTINUING CALIBRATION VERIFICATION REPORTS

APPENDIX B-1

RESULTS OF SOIL-VAPOR ANALYSES

HP Labs

October 25, 1999

Mr. B.G. Randolph
Foster Wheeler
611 Anton Boulevard
Suite 800
Costa Mesa, CA 92626

SUBJECT: DATA REPORT - JPL - OAK GROVE DRIVE, PASADENA, CA - FOSTER WHEELER PROJECT #1572.0289

HP Labs Project # 991004W1

Mr. Randolph:

Please find enclosed a data report for the above referenced location. Soil vapor samples were analyzed on-site in DOHS certified mobile laboratory (CERT #1745).

Project Summary

Soil vapor from 89 points was analyzed for:

- volatile halogenated hydrocarbons by EPA Method 8010
- volatile aromatic hydrocarbons (BTEX) by Modified EPA Method 8020
- 5 extra LCS

The samples were received on-site in appropriate containers with appropriate labels, seals, and chain-of-custody documentation.

Project Narrative

The results for all analyses and required QA/QC analyses are summarized in the enclosed tables. All calibrations, blanks, surrogates, and spike recoveries fulfill quality control criteria. No data qualifiers (flags) apply to any of the reported data.

HP Labs appreciates the opportunity to provide analytical services to Foster Wheeler on this project. If you have any questions relating to this data or report, please do not hesitate to contact us.

Sincerely,

James E. Picker, Ph. D.
Lab Director

HP LCbs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991004W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV749-20	VPSV750-40	VPSV751-100	VPSV752-120	VPSV753-145	VPSV754-145 DUP
DATE	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99
SAMPLING TIME	09:40	10:02	10:27	10:57	11:23	11:47	12:13
ANALYSIS TIME	09:41	10:06	10:31	10:59	11:25	11:53	12:18
SAMPLING DEPTH (feet)	--	20	40	100	120	145	145
VOLUME WITHDRAWN (cc)	200	80	160	400	480	580	580
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	105%	103%	106%	98%	95%	93%	104%
CHLOROBENZENE	137%	137%	141%	114%	110%	107%	107%
4 BROMOFLUORO BENZENE	104%	102%	105%	94%	92%	90%	100%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LABS

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991004W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV755-180	VPSV756-190	VPSV757-35	VPSV758-115	VPSV759-140	VPSV760-140 DUP
DATE	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99
SAMPLING TIME	12:40	13:07	13:31	13:56	14:21	14:51
ANALYSIS TIME	12:44	13:09	13:34	14:00	14:30	14:57
SAMPLING DEPTH (feet)	180	190	35	115	140	140
VOLUME WITHDRAWN (cc)	720	760	140	460	560	560
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	10	1.7	5.4	8.1
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	1.5	nd	1.9	1.7
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	2.2	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	104%	122%	100%	108%	106%	108%
CHLOROBENZENE	107%	126%	103%	111%	110%	111%
4 BROMOFLUORO BENZENE	100%	121%	96%	103%	101%	103%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991004W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV749-20	VPSV749-20	VPSV750-40	VPSV750-40	VPSV751-100	VPSV751-100	VPSV752-120	VPSV752-120
DATE	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99
SAMPLING TIME	9:40	9:40	10:02	10:02	10:27	10:27	10:57	10:57	11:23	11:23
ANALYSIS TIME	9:41	9:41	10:06	10:06	10:31	10:31	10:59	10:59	11:25	11:25
SAMPLING DEPTH (feet)	--	--	20	20	40	40	100	100	120	120
VOLUME WITHDRAWN (cc)	200	200	80	80	160	160	400	400	480	480
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	11.2	242	11.2	237	11.2	243	11.2	225	11.2	219
CHLOROBENZENE	18.1	714	18.1	717	18.1	735	18.1	594	18.1	575
4 BROMOFLUORO BENZENE	21.4	887	21.4	875	21.4	897	21.4	803	21.4	786

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991004W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV753-145	VPSV753-145	VPSV754-145 DUP	VPSV754-145 DUP	VPSV755-180	VPSV755-180	VPSV756-190	VPSV756-190
DATE	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99
SAMPLING TIME	11:47	11:47	12:13	12:13	12:40	12:40	13:07	13:07
ANALYSIS TIME	11:53	11:53	12:18	12:18	12:44	12:44	13:09	13:09
SAMPLING DEPTH (feet)	145	145	145	145	180	180	190	190
VOLUME WITHDRAWN (cc)	580	580	580	580	720	720	760	760
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	5.8	195	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	214	11.2	240	11.2	240	11.2	281
CHLOROBENZENE	18.1	560	18.1	558	18.1	559	18.1	656
4 BROMOFLUORO BENZENE	21.4	765	21.4	854	21.4	857	21.4	1032

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991004W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV757-35	VPSV757-35	VPSV758-115	VPSV758-115	VPSV759-140	VPSV759-140	VPSV760-140 DUP	VPSV760-140 DUP
DATE	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99	10/04/99
SAMPLING TIME	13:31	13:31	13:56	13:56	14:21	14:21	14:51	14:51
ANALYSIS TIME	13:34	13:34	14:00	14:00	14:30	14:30	14:57	14:57
SAMPLING DEPTH (feet)	35	35	115	115	140	140	140	140
VOLUME WITHDRAWN (cc)	140	140	460	460	560	560	560	560
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.6	1761	10.6	295	10.6	933	10.6	1408
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.9	22.9	nd	nd	11.9	29.5	11.9	26.4
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	231	11.2	248	11.1	244	11.2	248
CHLOROBENZENE	18.1	540	18.1	579	18.1	574	18.1	581
4 BROMOFLUORO BENZENE	21.4	821	21.4	876	21.5	866	21.4	880

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LCbs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991005W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV761-160	VPSV762-180	VPSV763-20	VPSV764-60	VPSV765-85	VPSV766-85 DUP
DATE	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99
SAMPLING TIME	06:35	07:23	07:50	08:24	08:45	09:11	09:35
ANALYSIS TIME	06:35	07:26	07:54	08:25	08:49	09:14	09:39
SAMPLING DEPTH (feet)	--	160	180	20	60	85	85
VOLUME WITHDRAWN (cc)	200	640	720	80	240	340	340
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	5.0	2.9	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	1.8	6.5	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	2.2	3.0	nd	2.5	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	112%	116%	120%	124%	111%	117%	106%
CHLOROBENZENE	105%	124%	127%	119%	115%	120%	110%
4 BROMOFLUORO BENZENE	97%	111%	123%	118%	107%	112%	102%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991005W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV767-100	VPSV768-120	VPSV769-140	VPSV770-160	VPSV771-180	VPSV772-180 DUP	VPSV773-205
DATE	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99
SAMPLING TIME	10:00	10:25	10:51	11:14	11:39	12:04	13:00
ANALYSIS TIME	10:04	10:28	10:52	11:18	11:43	12:07	13:02
SAMPLING DEPTH (feet)	100	120	140	160	180	180	205
VOLUME WITHDRAWN (cc)	400	480	560	640	720	720	820
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	5.2	1.3	6.2	nd	12	12	4.8
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	4.0	4.5	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	1.2	nd	2.1	1.9	2.2
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	103%	110%	91%	102%	111%	93%	93%
CHLOROBENZENE	108%	113%	94%	106%	115%	97%	93%
4 BROMOFLUORO BENZENE	99%	106%	87%	98%	106%	89%	89%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991005W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV761-160	VPSV761-160	VPSV762-180	VPSV762-180	VPSV763-20	VPSV763-20	VPSV764-60	VPSV764-60
DATE	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99
SAMPLING TIME	6:35	6:35	7:23	7:23	7:50	7:50	8:24	8:24	8:45	8:45
ANALYSIS TIME	6:35	6:35	7:26	7:26	7:54	7:54	8:25	8:25	8:49	8:49
SAMPLING DEPTH (feet)	--	--	160	160	180	180	20	20	60	60
VOLUME WITHDRAWN (cc)	200	200	640	640	720	720	80	80	240	240
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.5	862	10.5	511	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.8	27	11.9	100	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	6.0	198	6.0	270	nd	nd	6.0	226
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	10.9	258	11.1	267	11.1	275	11.1	285	11.1	255
CHLOROBENZENE	17.9	548	18.0	649	18.1	664	18.1	620	18.1	600
4 BROMOFLUORO BENZENE	21.2	832	21.3	947	21.4	1053	21.4	1010	21.4	912

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991005W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV765-85	VPSV765-85	VPSV766-85 DUP	VPSV766-85 DUP	VPSV767-100	VPSV767-100	VPSV768-120	VPSV768-120	VPSV769-140	VPSV769-140
DATE	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99
SAMPLING TIME	9:11	9:11	9:35	9:35	10:00	10:00	10:25	10:25	10:51	10:51
ANALYSIS TIME	9:14	9:14	9:39	9:39	10:04	10:04	10:28	10:28	10:52	10:52
SAMPLING DEPTH (feet)	85	85	85	85	100	100	120	120	140	140
VOLUME WITHDRAWN (cc)	340	340	340	340	400	400	480	480	560	560
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	10.6	904	10.6	231	10.5	1086
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd	6.0	108
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	11.2	269	11.1	244	11.1	237	11.1	254	11.1	209
CHLOROBENZENE	18.1	626	18.1	573	18.1	563	18.1	590	18.0	489
4 BROMOFLUORO BENZENE	21.4	956	21.4	873	21.4	846	21.3	902	21.3	745

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991005W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV770-160	VPSV770-160	VPSV771-180	VPSV771-180	VPSV772-180 DUP	VPSV772-180 DUP	VPSV773-205	VPSV773-205
DATE	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99	10/05/99
SAMPLING TIME	11:14	11:14	11:39	11:39	12:04	12:04	13:00	13:00
ANALYSIS TIME	11:18	11:18	11:43	11:43	12:07	12:07	13:02	13:02
SAMPLING DEPTH (feet)	160	160	180	180	180	180	205	205
VOLUME WITHDRAWN (cc)	640	640	720	720	720	720	820	820
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.6	2099	10.5	2005	10.6	833
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.9	61	11.8	69	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	6.0	191	6.0	174	6.0	200
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	235	11.1	256	11.1	214	11.1	213
CHLOROBENZENE	18.1	553	18.1	601	18.1	506	18.1	488
4 BROMOFLUORO BENZENE	21.4	835	21.4	905	21.4	761	21.4	759

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991006W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV774-20	VPSV775-40	VPSV776-60	VPSV777-85	VPSV778-85 DUP	VPSV779-105
DATE	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99
SAMPLING TIME	05:45	07:17	07:42	08:06	08:31	08:56	09:20
ANALYSIS TIME	05:45	07:20	07:44	08:09	08:34	08:58	09:24
SAMPLING DEPTH (feet)	--	20	40	60	85	85	105
VOLUME WITHDRAWN (cc)	200	80	160	240	340	340	420
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	3.7	6.6	19	22	38
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	47	4.8	3.3	3.3	4.4
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	8.9	1.7	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	2.3	67	2.4	4.5	4.7	13
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	108%	91%	92%	95%	103%	116%	100%
CHLOROBENZENE	108%	92%	94%	99%	104%	119%	103%
4 BROMOFLUORO BENZENE	103%	87%	89%	91%	99%	112%	96%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991006W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV780-120	VPSV781-140	VPSV782-200	VPSV783-20	VPSV784-20 DUP	VPSV785-80	VPSV786-105
DATE	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99
SAMPLING TIME	09:45	10:09	10:39	11:15	11:38	12:02	12:54
ANALYSIS TIME	09:48	10:17	10:42	11:16	11:40	12:04	12:59
SAMPLING DEPTH (feet)	120	140	200	20	20	80	105
VOLUME WITHDRAWN (cc)	480	560	800	80	80	320	420
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	64	8.6	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	2.9	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	4.1	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	1.1	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	17	3.3	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	96%	103%	103%	102%	100%	117%	103%
CHLOROBENZENE	98%	105%	105%	103%	103%	119%	106%
4 BROMOFLUORO BENZENE	92%	98%	100%	98%	96%	112%	98%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991006W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV774-20	VPSV774-20	VPSV775-40	VPSV775-40	VPSV776-60	VPSV776-60	VPSV777-85	VPSV777-85
DATE	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99
SAMPLING TIME	5:45	5:45	7:17	7:17	7:42	7:42	8:06	8:06	8:31	8:31
ANALYSIS TIME	5:45	5:45	7:20	7:20	7:44	7:44	8:09	8:09	8:34	8:34
SAMPLING DEPTH (feet)	--	--	20	20	40	40	60	60	85	85
VOLUME WITHDRAWN (cc)	200	200	80	80	160	160	240	240	340	340
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	10.5	651	10.5	1153	10.5	3366
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	6.1	417	6.1	42.3	6.1	29.3
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	11.8	136	11.9	26.4	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.9	206	5.9	6037	6.0	221	6.0	409
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	11.1	248	11.1	209	11.1	212	11.1	218	11.1	236
CHLOROBENZENE	18.1	564	18.0	482	18.0	492	18.0	515	18.0	544
4 BROMOFLUORO BENZENE	21.4	876	21.3	742	21.3	763	21.3	780	21.3	845

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991006W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV778-85 DUP	VPSV778-85 DUP	VPSV779-105	VPSV779-105	VPSV780-120	VPSV780-120	VPSV781-140	VPSV781-140	VPSV782-200	VPSV782-200
DATE	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99
SAMPLING TIME	8:56	8:56	9:20	9:20	9:45	9:45	10:09	10:09	10:39	10:39
ANALYSIS TIME	8:58	8:58	9:24	9:24	9:48	9:48	10:17	10:17	10:42	10:42
SAMPLING DEPTH (feet)	85	85	105	105	120	120	140	140	200	200
VOLUME WITHDRAWN (cc)	340	340	420	420	480	480	560	560	800	800
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.5	3750	10.5	6669	10.5	11057	10.6	1490	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	9.3	859	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	6.1	28.9	6.1	39.0	6.1	36.6	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	11.9	16.7	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.0	421	6.0	1220	6.0	1525	6.0	294	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	11.1	266	11.1	231	11.1	220	11.2	236	11.2	237
CHLOROBENZENE	18.1	619	18.1	540	18.1	511	18.1	547	18.1	548
4 BROMOFLUORO BENZENE	21.3	953	21.4	822	21.4	786	21.4	839	21.4	851

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991006W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV783-20	VPSV783-20	VPSV784-20 DUP	VPSV784-20 DUP	VPSV785-80	VPSV785-80	VPSV786-105	VPSV786-105
DATE	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99	10/06/99
SAMPLING TIME	11:15	11:15	11:38	11:38	12:02	12:02	12:54	12:54
ANALYSIS TIME	11:16	11:16	11:40	11:40	12:04	12:04	12:59	12:59
SAMPLING DEPTH (feet)	20	20	20	20	80	80	105	105
VOLUME WITHDRAWN (cc)	80	80	80	80	320	320	420	420
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.1	235	11.1	231	11.1	268	11.2	237
CHLOROBENZENE	18.1	536	18.1	539	18.1	620	18.1	551
4 BROMOFLUORO BENZENE	21.4	833	21.4	824	21.4	957	21.4	837

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LCbs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991007W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV787-20	VPSV788-35	VPSV789-50	VPSV791-50 DUP	VPSV790-60	VPSV792-80	VPSV793-95
DATE	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99
SAMPLING TIME	05:30	07:17	07:35	08:04	08:54	08:31	09:18	09:42
ANALYSIS TIME	05:32	07:18	07:42	08:07	08:56	08:32	09:20	09:44
SAMPLING DEPTH (feet)	--	20	35	50	50	60	80	95
VOLUME WITHDRAWN (cc)	200	80	140	200	200	240	320	380
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	1.6
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	106%	111%	112%	95%	98%	105%	108%	96%
CHLOROBENZENE	108%	110%	115%	97%	100%	108%	111%	98%
4 BROMOFLUORO BENZENE	101%	106%	109%	92%	94%	100%	104%	92%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991007W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV794-110	VPSV795-125	VPSV796-125 DUP	VPSV797-140	VPSV798-155	VPSV799-20	VPSV800-35
DATE	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99
SAMPLING TIME	10:06	10:31	10:55	11:20	11:46	12:33	13:01
ANALYSIS TIME	10:09	10:33	10:58	11:22	11:47	12:40	13:04
SAMPLING DEPTH (feet)	110	125	125	140	155	20	35
VOLUME WITHDRAWN (cc)	440	500	500	560	620	80	140
VOLUME INJECTED	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	13	13	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	3.6	9.0	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	1.5	1.5	19	17	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd
SURROGATES							
1,4 DIFLUORO BENZENE	101%	112%	107%	110%	97%	103%	94%
CHLOROBENZENE	103%	115%	110%	113%	99%	106%	97%
4 BROMOFLUORO BENZENE	96%	107%	102%	105%	92%	98%	91%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991007W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV787-20	VPSV787-20	VPSV788-35	VPSV788-35	VPSV789-50	VPSV789-50	VPSV791-50 DUP	VPSV791-50 DUP
DATE	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99
SAMPLING TIME	5:30	5:30	7:17	7:17	7:35	7:35	8:04	8:04	8:54	8:54
ANALYSIS TIME	5:32	5:32	7:18	7:18	7:42	7:42	8:07	8:07	8:56	8:56
SAMPLING DEPTH (feet)	--	--	20	20	35	35	50	50	50	50
VOLUME WITHDRAWN (cc)	200	200	80	80	140	140	200	200	200	200
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	11.1	243	11.1	255	11.1	258	11.1	219	11.1	225
CHLOROBENZENE	18.1	565	18.0	574	18.0	601	18.1	507	18.1	523
4 BROMOFLUORO BENZENE	21.4	866	21.3	909	21.3	929	21.4	786	21.4	806

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991007W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV790-60	VPSV790-60	VPSV792-80	VPSV792-80	VPSV793-95	VPSV793-95	VPSV794-110	VPSV794-110	VPSV795-125	VPSV795-125
DATE	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99	10/07/99
SAMPLING TIME	8:31	8:31	9:18	9:18	9:42	9:42	10:06	10:06	10:31	10:31
ANALYSIS TIME	8:32	8:32	9:20	9:20	9:44	9:44	10:09	10:09	10:33	10:33
SAMPLING DEPTH (feet)	60	60	80	80	95	95	110	110	125	125
VOLUME WITHDRAWN (cc)	240	240	320	320	380	380	440	440	500	500
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	10.5	274	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd	6.0	132
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	11.2	241	11.1	249	11.1	220	11.2	232	11.1	257
CHLOROBENZENE	18.1	562	18.1	577	18.1	511	18.1	538	18.1	600
4 BROMOFLUORO BENZENE	21.4	858	21.4	889	21.4	786	21.4	818	21.4	910

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991007W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV796-125 DUP		VPSV796-125 DUP		VPSV797-140		VPSV797-140		VPSV798-155		VPSV798-155		VPSV799-20		VPSV799-20		VPSV800-35		VPSV800-35	
DATE	10/07/99		10/07/99		10/07/99		10/07/99		10/07/99		10/07/99		10/07/99		10/07/99		10/07/99		10/07/99	
SAMPLING TIME	10:55		10:55		11:20		11:20		11:46		11:46		12:33		12:33		13:01		13:01	
ANALYSIS TIME	10:58		10:58		11:22		11:22		11:47		11:47		12:40		12:40		13:04		13:04	
SAMPLING DEPTH (feet)	125		125		140		140		155		155		20		20		35		35	
VOLUME WITHDRAWN (cc)	500		500		560		560		620		620		80		80		140		140	
VOLUME INJECTED	1		1		1		1		1		1		1		1		1		1	
DILUTION FACTOR	1		1		1		1		1		1		1		1		1		1	
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd		nd		10.6	2245			10.6	2273			nd		nd		nd		nd	
CHLOROETHANE/BROMOMETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
CHLOROFORM	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,1-DICHLORO ETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,2-DICHLORO ETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,1-DICHLORO ETHENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
CIS-1,2-DICHLORO ETHENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
TRANS-1,2-DICHLORO ETHENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
DICHLOROMETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
TETRACHLORO ETHENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,1,1,2-TETRACHLORO ETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,1,2,2-TETRACHLORO ETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,1,1-TRICHLORO ETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,1,2-TRICHLORO ETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
TRICHLORO ETHENE	nd		nd		11.9	55.0			11.9	138			nd		nd		nd		nd	
VINYL CHLORIDE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
TRICHLOROFLUOROMETHANE (FR11)	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
DICHLORODIFLUOROMETHANE (FR12)	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.0	131	6.0	1687			6.0	1508			nd		nd		nd		nd		nd	
BENZENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
ETHYLBENZENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
TOLUENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
m&p-XYLENES	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
o-XYLENE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
CHLOROMETHANE	nd		nd		nd		nd		nd		nd		nd		nd		nd		nd	
SURROGATES																				
1,4 DIFLUORO BENZENE	11.2	246	11.1	253			11.2	223			11.2	236			11.1	217				
CHLOROBENZENE	18.1	576	18.1	590			18.1	519			18.1	551			18.1	508				
4 BROMOFLUORO BENZENE	21.5	870	21.4	895			21.4	783			21.4	837			21.4	775				

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LCbs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991008W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV801-65	VPSV802-65 DUP	VPSV803-80	VPSV804-95	VPSV805-108
DATE	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99
SAMPLING TIME	05:19	07:04	07:27	07:51	08:15	08:38
ANALYSIS TIME	05:19	07:05	07:29	07:53	08:17	08:41
SAMPLING DEPTH (feet)	--	65	65	80	95	108
VOLUME WITHDRAWN (cc)	200	260	260	320	380	435
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	8.2
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	98%	92%	96%	96%	92%	91%
CHLOROBENZENE	101%	94%	101%	96%	95%	93%
4 BROMOFLUORO BENZENE	95%	88%	93%	92%	89%	87%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991008W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV806-118	VPSV807-35	VPSV808-35 DUP	VPSV809-55	VPSV810-75	VPSV811-92
DATE	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99
SAMPLING TIME	09:07	09:54	10:17	10:42	11:07	11:35
ANALYSIS TIME	09:08	09:55	10:20	10:45	11:11	11:36
SAMPLING DEPTH (feet)	118	35	35	55	75	92
VOLUME WITHDRAWN (cc)	475	140	140	220	300	370
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	52	48	49	153	30	20
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	5.1	2.6	2.2	1.1	12	15
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	1.3	2.0	2.2	9.2	2.3	2.6
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	33	32	98	7.6	1.3
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	27	20	61	2.2	1.4
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	1.2	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	2.5	nd	nd	1.3	3.9	5.8
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	88%	115%	110%	93%	101%	97%
CHLOROBENZENE	91%	116%	113%	94%	104%	100%
4 BROMOFLUORO BENZENE	85%	109%	105%	88%	96%	92%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991008W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV801-65	VPSV801-65	VPSV802-65 DUP	VPSV802-65 DUP	VPSV803-80	VPSV803-80
DATE	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99
SAMPLING TIME	5:19	5:19	7:04	7:04	7:27	7:27	7:51	7:51
ANALYSIS TIME	5:19	5:19	7:05	7:05	7:29	7:29	7:53	7:53
SAMPLING DEPTH (feet)	--	--	65	65	65	65	80	80
VOLUME WITHDRAWN (cc)	200	200	260	260	260	260	320	320
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.1	226	11.1	211	11.1	220	11.0	220
CHLOROBENZENE	18.1	528	18.0	492	18.1	528	18.0	500
4 BROMOFLUORO BENZENE	21.3	808	21.3	752	21.4	792	21.4	788

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LOBS

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991008W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV804-95	VPSV804-95	VPSV805-108	VPSV805-108	VPSV806-118	VPSV806-118	VPSV807-35	VPSV807-35
DATE	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99
SAMPLING TIME	8:15	8:15	8:38	8:38	9:07	9:07	9:54	9:54
ANALYSIS TIME	8:17	8:17	8:41	8:41	9:08	9:08	9:55	9:55
SAMPLING DEPTH (feet)	95	95	108	108	118	118	35	35
VOLUME WITHDRAWN (cc)	380	380	435	435	475	475	140	140
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.5	1432	10.6	8997	10.6	8372
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	9.3	1530	9.4	768
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	6.2	11.9	6.2	18.1
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	10.1	7262
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	11.9	408
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	6.0	225	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.1	211	11.1	209	11.1	203	11.2	264
CHLOROBENZENE	18.1	494	18.0	486	18.1	473	18.1	603
4 BROMOFLUORO BENZENE	21.4	756	21.4	746	21.4	723	21.4	933

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991008W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV808-35 DUP	VPSV808-35 DUP	VPSV809-55	VPSV809-55	VPSV810-75	VPSV810-75	VPSV811-92	VPSV811-92
DATE	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99	10/08/99
SAMPLING TIME	10:17	10:17	10:42	10:42	11:07	11:07	11:35	11:35
ANALYSIS TIME	10:20	10:20	10:45	10:45	11:11	11:11	11:36	11:36
SAMPLING DEPTH (feet)	35	35	55	55	75	75	92	92
VOLUME WITHDRAWN (cc)	140	140	220	220	300	300	370	370
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.6	8537	10.6	26678	10.6	5169	10.6	3443
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	9.3	675	9.4	325	9.4	3568	9.4	4395
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	6.1	19.3	6.2	82.0	6.2	20.7	6.2	23.3
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	10.1	6950	10.1	21405	10.1	1656	10.1	286
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.9	301	11.9	926	11.9	33.3	11.9	21.0
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	5.4	316	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	6.0	116	6.1	350	6.0	525
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	253	11.2	213	11.2	233	11.2	224
CHLOROBENZENE	18.1	590	18.1	493	18.1	544	18.1	524
4 BROMOFLUORO BENZENE	21.4	897	21.4	754	21.4	823	21.4	787

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991009W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV812-25	VPSV813-40	VPSV814-40 DUP	VPSV815-55	VPSV816-70
DATE	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99
SAMPLING TIME	06:32	08:18	08:42	09:06	09:30	09:54
ANALYSIS TIME	06:32	08:20	08:44	09:08	09:32	09:56
SAMPLING DEPTH (feet)	--	25	40	40	55	70
VOLUME WITHDRAWN (cc)	200	100	160	160	220	280
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	3.9
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	97%	97%	89%	94%	93%	89%
CHLOROBENZENE	99%	98%	92%	96%	97%	91%
4 BROMOFLUORO BENZENE	91%	93%	86%	90%	90%	86%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991009W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV817-90	VPSV818-155	VPSV819-180	VPSV820-180 DUP	VPSV821-195	VPSV822-25
DATE	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99
SAMPLING TIME	10:18	10:47	11:13	11:36	12:00	12:33
ANALYSIS TIME	10:20	10:49	11:14	11:38	12:02	12:34
SAMPLING DEPTH (feet)	90	155	180	180	195	25
VOLUME WITHDRAWN (cc)	360	620	720	720	780	100
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	28	1.6	1.7	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	1.5	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	78	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	96%	97%	99%	99%	98%	99%
CHLOROBENZENE	99%	98%	101%	101%	101%	101%
4 BROMOFLUORO BENZENE	92%	92%	93%	94%	93%	93%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND
ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991009W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV823-40	VPSV824-60	VPSV825-80	VPSV826-80 DUP	VPSV827-100	VPSV828-120
DATE	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99
SAMPLING TIME	12:56	13:45	14:10	14:37	15:01	15:25
ANALYSIS TIME	12:58	13:48	14:15	14:39	15:03	15:28
SAMPLING DEPTH (feet)	40	60	80	80	100	120
VOLUME WITHDRAWN (cc)	160	240	320	320	400	480
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	2.1	nd	1.6	1.9	12	19
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	1.6	3.6
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	2.6
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	3.1	4.0
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	1.6
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	1.8	12
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	108%	107%	93%	98%	98%	96%
CHLOROBENZENE	111%	109%	95%	101%	100%	98%
4 BROMOFLUORO BENZENE	103%	115%	88%	93%	93%	91%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991009W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV812-25	VPSV812-25	VPSV813-40	VPSV813-40	VPSV814-40 DUP	VPSV814-40 DUP
DATE	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99
SAMPLING TIME	6:32	6:32	8:18	8:18	8:42	8:42	9:06	9:06
ANALYSIS TIME	6:32	6:32	8:20	8:20	8:44	8:44	9:08	9:08
SAMPLING DEPTH (feet)	--	--	25	25	40	40	40	40
VOLUME WITHDRAWN (cc)	200	200	100	100	160	160	160	160
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	r.d	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	223	11.1	223	11.1	204	11.1	217
CHLOROBENZENE	18.2	516	18.0	509	18.1	480	18.1	499
4 BROMOFLUORO BENZENE	21.5	776	21.3	791	21.4	731	21.4	768

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991009W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV819-180	VPSV819-180	VPSV820-180 DUP	VPSV820-180 DUP	VPSV821-195	VPSV821-195	VPSV822-25	VPSV822-25
DATE	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99
SAMPLING TIME	11:13	11:13	11:36	11:36	12;00	12:00	12:33	12:33
ANALYSIS TIME	11:14	11:14	11:38	11:38	12:02	12:02	12:34	12:34
SAMPLING DEPTH (feet)	180	180	180	180	195	195	25	25
VOLUME WITHDRAWN (cc)	720	720	720	720	780	780	100	100
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.6	277	10.5	290	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	9.4	442	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	228	11.1	227	11.2	225	11.2	228
CHLOROBENZENE	18.1	526	18.1	528	18.1	527	18.1	529
4 BROMOFLUORO BENZENE	21.4	797	21.4	803	21.4	791	21.4	795

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991009W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV823-40	VPSV823-40	VPSV824-60	VPSV824-60	VPSV825-80	VPSV825-80	VPSV826-80 DUP	VPSV826-80 DUP
DATE	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99	10/09/99
SAMPLING TIME	12:56	12:56	13:45	13:45	14:10	14:10	14:37	14:37
ANALYSIS TIME	12:58	12:58	13:48	13:48	14:15	14:15	14:39	14:39
SAMPLING DEPTH (feet)	40	40	60	60	80	80	80	80
VOLUME WITHDRAWN (cc)	160	160	240	240	320	320	320	320
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.5	363	nd	nd	10.6	281	10.5	322
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.1	248	11.2	245	11.2	213	11.1	226
CHLOROBENZENE	18.1	580	18.1	571	18.1	498	18.1	525
4 BROMOFLUORO BENZENE	21.4	881	21.4	982	21.4	748	21.4	796

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991009W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV827-100	VPSV827-100	VPSV828-120	VPSV828-120
DATE	10/09/99	10/09/99	10/09/99	10/09/99
SAMPLING TIME	15:01	15:01	15:25	15:25
ANALYSIS TIME	15:03	15:03	15:28	15:28
SAMPLING DEPTH (feet)	100	100	120	120
VOLUME WITHDRAWN (cc)	400	400	480	480
VOLUME INJECTED	1	1	1	1
DILUTION FACTOR	1	1	1	1
	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.5	2145	10.6	3311
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd
CHLOROFORM	9.3	485	9.4	1073
1,1-DICHLORO ETHANE	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	6.2	23.1
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd
TRICHLORO ETHENE	11.9	47.8	11.9	61.2
VINYL CHLORIDE	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	5.4	422
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.0	164	6.0	1071
BENZENE	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd
SURROGATES				
1,4 DIFLUORO BENZENE	11.1	225	11.2	220
CHLOROBENZENE	18.1	521	18.1	509
4 BROMOFLUORO BENZENE	21.4	797	21.4	775

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV829-140	VPSV830-155	VPSV831-170	VPSV832-170 DUP	VPSV833-185
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	05:21	07:23	07:46	08:13	08:37	09:02
ANALYSIS TIME	05:21	07:24	07:49	08:14	08:38	09:03
SAMPLING DEPTH (feet)	--	140	155	170	170	185
VOLUME WITHDRAWN (cc)	200	560	620	680	680	740
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	3.0	6.0	6.5	6.4	7.4
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	1.7	nd	1.9	2.4	1.8
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	1.6	2.3	1.9	4.4
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	1.1	1.1	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	1.8	1.5	2.0	2.1	2.8
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	96%	91%	96%	110%	109%	107%
CHLOROBENZENE	98%	87%	98%	112%	111%	109%
4 BROMOFLUORO BENZENE	91%	86%	92%	105%	104%	103%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LCbs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV834-25	VPSV835-45	VPSV836-65	VPSV837-80	VPSV838-80 DUP	VPSV839-110
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	09:25	09:48	10:13	10:37	11:02	11:25
ANALYSIS TIME	09:27	09:51	10:15	10:39	11:03	11:26
SAMPLING DEPTH (feet)	25	45	65	80	80	110
VOLUME WITHDRAWN (cc)	100	180	260	320	320	440
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	9.3
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	1.7
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	1.7
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	1.2
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	5.8
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	97%	96%	109%	107%	107%	97%
CHLOROBENZENE	99%	98%	111%	109%	110%	99%
4 BROMOFLUORO BENZENE	93%	91%	105%	103%	104%	94%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV840-125	VPSV841-140	VPSV842-155	VPSV843-170	VPSV844-170 DUP
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	11:49	12:37	13:03	13:27	13:52
ANALYSIS TIME	11:50	12:41	13:05	13:29	13:53
SAMPLING DEPTH (feet)	125	140	155	170	170
VOLUME WITHDRAWN (cc)	500	560	620	680	680
VOLUME INJECTED	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1
CARBON TETRACHLORIDE	3.2	6.6	6.7	8.1	5.6
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd
CHLOROFORM	nd	1.9	1.1	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	1.8	1.4	1.3
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	1.2	3.9	2.9
VINYL CHLORIDE	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	1.6	1.6	1.1	1.1
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	3.6	3.4	3.6	4.9	3.5
BENZENE	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd
SURROGATES					
1,4 DIFLUORO BENZENE	97%	100%	95%	97%	107%
CHLOROBENZENE	98%	103%	98%	98%	108%
4 BROMOFLUORO BENZENE	92%	96%	91%	92%	101%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LABS

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV829-140	VPSV829-140	VPSV830-155	VPSV830-155	VPSV831-170	VPSV831-170	VPSV832-170 DUP	VPSV832-170 DUP
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	5:21	5:21	7:23	7:23	7:46	7:46	8:13	8:13	8:37	8:37
ANALYSIS TIME	5:21	5:21	7:24	7:24	7:49	7:49	8:14	8:14	8:38	8:38
SAMPLING DEPTH (feet)	--	--	140	140	155	155	170	170	170	170
VOLUME WITHDRAWN (cc)	200	200	560	560	620	620	680	680	680	680
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.5	515	10.5	1039	10.5	1130	10.5	1121
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	6.1	15.4	nd	nd	6.1	16.7	6.1	20.9
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	11.9	24.1	11.9	35.5	11.9	29.2
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	5.3	287	5.3	285
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.9	159	6.0	133	6.0	177	6.0	188
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES										
1,4 DIFLUORO BENZENE	11.2	221	11.1	209	11.1	220	11.1	252	11.1	250
CHLOROBENZENE	18.2	510	18.0	452	18.1	513	18.1	584	18.1	579
4 BROMOFLUORO BENZENE	21.5	773	21.3	737	21.3	785	21.3	898	21.3	891

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV833-185	VPSV833-185	VPSV834-25	VPSV834-25	VPSV835-45	VPSV835-45	VPSV836-65	VPSV836-65
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	9:02	9:02	9:25	9:25	9:48	9:48	10:13	10:13
ANALYSIS TIME	9:03	9:03	9:27	9:27	9:51	9:51	10:15	10:15
SAMPLING DEPTH (feet)	185	185	25	25	45	45	65	65
VOLUME WITHDRAWN (cc)	740	740	100	100	180	180	260	260
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.5	1282	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	6.1	15.8	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.9	67.9	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.0	253	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.1	247	11.1	223	11.2	220	11.1	251
CHLOROBENZENE	18.0	568	18.0	518	18.1	509	18.1	577
4 BROMOFLUORO BENZENE	21.3	881	21.3	798	21.4	781	21.4	894

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV837-80	VPSV837-80	VPSV838-80 DUP	VPSV838-80 DUP	VPSV839-110	VPSV839-110	VPSV840-125	VPSV840-125
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	10:37	10:37	11:02	11:02	11:25	11:25	11:49	11:49
ANALYSIS TIME	10:39	10:39	11:03	11:03	11:26	11:26	11:50	11:50
SAMPLING DEPTH (feet)	80	80	80	80	110	110	125	125
VOLUME WITHDRAWN (cc)	320	320	320	320	440	440	500	500
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	10.5	1621	10.6	558
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	9.2	511	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	11.8	25.6	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	5.3	321	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	5.9	523	6.0	328
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.1	245	11.1	247	11.0	224	11.1	222
CHLOROBENZENE	18.1	567	18.1	575	18.0	519	18.1	512
4 BROMOFLUORO BENZENE	21.4	877	21.4	884	21.4	803	21.4	787

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV841-140	VPSV841-140	VPSV842-155	VPSV842-155	VPSV843-170	VPSV843-170	VPSV844-170 DUP	VPSV844-170 DUP
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	12:37	12:37	13:03	13:03	13:27	13:27	13:52	13:52
ANALYSIS TIME	12:41	12:41	13:05	13:05	13:29	13:29	13:53	13:53
SAMPLING DEPTH (feet)	140	140	155	155	170	170	170	170
VOLUME WITHDRAWN (cc)	560	560	620	620	680	680	680	680
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.6	1143	10.6	1166	10.6	1402	10.6	978
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	9.4	557	9.3	339	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	6.1	15.8	6.1	12.1	6.1	11
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.9	18.8	11.9	60.3	11.9	45
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	5.4	423	5.3	421	5.4	286	5.4	303
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.0	312	6.0	327	6.0	447	6.0	318
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	231	11.1	219	11.1	222	11.1	246
CHLOROBENZENE	18.1	536	18.1	512	18.1	512	18.1	566
4 BROMOFLUORO BENZENE	21.4	821	21.4	780	21.4	788	21.4	860

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LCbs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991010W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV841-140	VPSV841-140	VPSV842-155	VPSV842-155	VPSV843-170	VPSV843-170	VPSV844-170 DUP	VPSV844-170 DUP
DATE	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99	10/10/99
SAMPLING TIME	12:37	12:37	13:03	13:03	13:27	13:27	13:52	13:52
ANALYSIS TIME	12:41	12:41	13:05	13:05	13:29	13:29	13:53	13:53
SAMPLING DEPTH (feet)	140	140	155	155	170	170	170	170
VOLUME WITHDRAWN (cc)	560	560	620	620	680	680	680	680
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.6	1143	10.6	1166	10.6	1402	10.6	978
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	9.4	557	9.3	339	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	6.1	15.8	6.1	12.1	6.1	11
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	11.9	18.8	11.9	60.3	11.9	45
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	5.4	423	5.3	421	5.4	286	5.4	303
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.0	312	6.0	327	6.0	447	6.0	318
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	231	11.1	219	11.1	222	11.1	246
CHLOROBENZENE	18.1	536	18.1	512	18.1	512	18.1	566
4 BROMOFLUORO BENZENE	21.4	821	21.4	780	21.4	788	21.4	860

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991011W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VPSV845-20	VPSV846-35	VPSV847-50	VPSV848-70	VPSV849-85
DATE	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99
SAMPLING TIME	05:18	07:22	07:45	08:09	08:36	09:24
ANALYSIS TIME	05:18	07:23	07:47	08:12	08:37	09:30
SAMPLING DEPTH (feet)	--	20	35	50	70	85
VOLUME WITHDRAWN (cc)	200	80	140	200	280	340
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	6.3
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	1.4
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	48
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	106%	93%	109%	99%	99%	96%
CHLOROBENZENE	110%	96%	112%	101%	101%	95%
4 BROMOFLUORO BENZENE	101%	89%	105%	93%	91%	90%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND
ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT # 1572.0289
JPL
OAK GROVE DRIVE
PASADENA. CA

HP Labs Project #991011W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	VPSV850-85 DUP	VPSV851-100	VPSV852-110	VPSV853-120	VPSV854-130
DATE	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99
SAMPLING TIME	09:53	10:16	10:43	11:07	11:31
ANALYSIS TIME	09:54	10:19	10:45	11:09	11:33
SAMPLING DEPTH (feet)	85	100	110	120	130
VOLUME WITHDRAWN (cc)	340	400	440	480	520
VOLUME INJECTED	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1
CARBON TETRACHLORIDE	7.7	9.0	12	4.9	2.0
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd
TRICHLORO ETHENE	2.5	3.3	3.2	17	15
VINYL CHLORIDE	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	47	46	55	16	9.0
BENZENE	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd
SURROGATES					
1,4 DIFLUORO BENZENE	101%	98%	96%	96%	97%
CHLOROBENZENE	104%	102%	98%	98%	99%
4 BROMOFLUORO BENZENE	96%	94%	91%	91%	92%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991011W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	BLANK	BLANK	VPSV845-20	VPSV845-20	VPSV846-35	VPSV846-35	VPSV847-50	VPSV847-50
DATE	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99
SAMPLING TIME	5:18	5:18	7:22	7:22	7:45	7:45	8:09	8:09
ANALYSIS TIME	5:18	5:18	7:23	7:23	7:47	7:47	8:12	8:12
SAMPLING DEPTH (feet)	--	--	20	20	35	35	50	50
VOLUME WITHDRAWN (cc)	200	200	80	80	140	140	200	200
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	243	11.1	215	11.0	250	11.2	227
CHLOROBENZENE	18.1	572	18.0	502	18.0	583	18.2	525
4 BROMOFLUORO BENZENE	21.5	862	21.3	763	21.3	894	21.5	792

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991011W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV848-70	VPSV848-70	VPSV849-85	VPSV849-85	VPSV850-85 DUP	VPSV850-85 DUP	VPSV851-100	VPSV851-100
DATE	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99
SAMPLING TIME	8:36	8:36	9:24	9:24	9:53	9:53	10:16	10:16
ANALYSIS TIME	8:37	8:37	9:30	9:30	9:54	9:54	10:19	10:19
SAMPLING DEPTH (feet)	70	70	85	85	85	85	100	100
VOLUME WITHDRAWN (cc)	280	280	340	340	340	340	400	400
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	10.6	1089	10.5	1342	10.6	1563
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	12.0	21.1	11.9	38.6	11.9	50.3
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	5.9	4313	5.9	4290	6.0	4141
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
SURROGATES								
1,4 DIFLUORO BENZENE	11.2	227	11.2	221	11.1	232	11.1	226
CHLOROBENZENE	18.2	525	18.1	494	18.1	542	18.1	533
4 BROMOFLUORO BENZENE	21.5	777	21.4	772	21.4	821	21.4	803

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LOs

FOSTER WHEELER PROJECT #1572.0289
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #991011W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
AREA COUNTS

	VPSV852-110	VPSV852-110	VPSV853-120	VPSV853-120	VPSV854-130	VPSV854-130
DATE	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99	10/11/99
SAMPLING TIME	10:43	10:43	11:07	11:07	11:31	11:31
ANALYSIS TIME	10:45	10:45	11:09	11:09	11:33	11:33
SAMPLING DEPTH (feet)	110	110	120	120	130	130
VOLUME WITHDRAWN (cc)	440	440	480	480	520	520
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	10.6	2096	10.6	858	10.5	355
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	11.9	48.5	11.9	264	11.9	234
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	6.0	5011	6.0	1484	5.9	810
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
CHLOROMETHANE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	11.1	220	11.1	220	11.1	222
CHLOROBENZENE	18.1	510	18.1	509	18.1	519
4 BROMOFLUORO BENZENE	21.4	781	21.4	780	21.4	789

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

APPENDIX B-2

CHAIN-OF-CUSTODY FORMS

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991004WI

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd., Ste 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/4/99 Page 1 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL – Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/4/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals						Field Notes	Total # of containers
Blank	—	0940	10/4/99	Vapor	Syringe	X				X															Volume Purged in cc.	
VPSV-749	20	1002				X				X															80	
VPSV-750	40	1027				X				X															160	
—	60	—	No Sample; Tip #3 still plugged; cannot purge or blow.																						—	
—	85	—	No Sample; Tip #4 newly plugged; cannot purge or blow.																						—	
VPSV-751	100	1057				X				X															v. difficult 400	
VPSV-752	120	1123				X				X															v. difficult 480	
VPSV-753	145	1147				X				X															580	
VPSV-754 (Dup)	145	1213				X				X															580	
—	165	1235	No Sample; #3 now plugged; cannot blow or purge – was water plugged in 3/99.																						—	
VPSV-755	180	1240				X				X															720	
VBV-756	190	1307				X				X															760	
—	20	1329	No Sample; #1 still plugged; cannot blow or purge.																						—	
VPSV-757	35	1331				X				X															140	
—	55	1350	No Sample; #3 still plugged – cannot blow or purge.																							

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

B.G. Randolph 10/4/99 1500 — 10-4-99 1500

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

teg
Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991004W1

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd., Suite 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/4/99 Page 2 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/4/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
—	80	1351	10/4/99	No Vapor Sample	Syringe	X	No Sample			X	No Sample - #4 now totally plugged.									Vol Purged in cc: —	
—	100	1353		No Sample; Tip #5 still plugged; cannot blow or purge.																—	
VPSV-758	115	1356		Vapor	Syringe	X				X										460	
VPSV-759	140	1421				X				X										560	
VPSV-760 (Dup.)	140	1451				X				X										560	

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

B.G. Randolph 10/4/99 1500 — 10-4-99 1500

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project #: 991005WI

Outside Lab: _____

Client: Foster Wheeler
Address: 611 Anton Blvd., Ste 800
Costa Mesa, CA 92626
Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/5/99 Page 1 Of 2
Client Project #: 1522.0289 Project Manager: B.G. Randolph
Location: JPL - Pasadena, CA
Collector: B.G. Randolph Date of Collection: 10/5/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
Blank	—	0635	10/5/99	Vapor	Syringe	X				X										Volume Purged in cc.:	
VPSV-761	160	0723				X				X										640	
VPSV-762	180	0750				X				X										720	
—	195	0815		No Sample; Tip #10 is plugged - cannot purge or blow																—	
VPSV-763	20	0824				X				X										80	
—	35	0836		No Sample; Tip #2 still water plugged - can blow but cannot purge.																—	
VPSV-764	60	0845				X				X										240	
VPSV-765	85	0911				X				X										340	
VPSV-766 (Dup)	85	0935				X				X										340	
VPSV-767	100	1000				X				X										400	
VPSV-768	120	1025				X				X										480	
VPSV-769	140	1051				X				X										560	
VPSV-770	160	1114				X				X										640	
VPSV-771	180	1139				X				X										720	
VPSV-772 (Dup)	180	1204				X				X										720	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/5/99 1310	[signature]	10-5-99 1310
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: _____
Chain of Custody seals Y/N/NA _____
Seals intact? Y/N/NA _____
Received good condition/cold _____

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project #: 991005W1

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd., Ste. 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/5/99 Page 2 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/5/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals						Field Notes	Total # of containers
VPSV-773	205	1300	10/5/99	Vapor	Syringe	X				X															Vol Purged in cc: 820	

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

B.G. Randolph 10/5/99 1310 — 10-5-99 1310

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991006WK1

Outside Lab: _____

Client: Foster Wheeler
Address: 611 Anton Blvd., Ste. 800
Costa Mesa, CA 92626
Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/6/99 Page 1 Of 2
Client Project #: 1572.0289 Project Manager: B.G. Randolph
Location: JPL - Pasadena, CA
Collector: B.G. Randolph Date of Collection: 10/6/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals						Field Notes	Total # of containers
Blank	—	0545	10/6/99	Vapor	Syringe	X				X															Volume Purged in cc:	
VPSV-774	20	0717				X				X															80	
VPSV-775	40	0742				X				X															160	
VPSV-776	60	0806				X				X															240	
VPSV-777	85	0831				X				X															340	
VPSV-778 (Dup)	85	0856				X				X															340	
VPSV-779	105	0920				X				X															420	
VPSV-780	120	0945				X				X															480	
VPSV-781	140	1009				X				X															560	
—	160	1021		No Sample; Tip #3 now totally plugged - cannot blow or purge.																					—	
—	180	1025		No Sample; Tip #2 now totally plugged - cannot blow or purge.																					—	
VPSV-782	200	1039				X				X															800	
VPSV-783	20	1115				X				X															80	
VPSV-784 (Dup)	20	1138				X				X															80	
—	45	1142		No Sample; Tip #2 still plugged - cannot blow or purge.																					—	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/6/99 1320	[signature]	10-6-99 1320
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers:
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

teg
Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991006W1

Outside Lab: _____

Client: Foster Wheeler
Address: 611 Anton Blvd., Suite 800
Costa Mesa, CA 92626
Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/6/99 Page 2 Of 2
Client Project #: 1572.0289 Project Manager: B.G. Randolph
Location: JPL - Costa Mesa, CA
Collector: B.G. Randolph Date of Collection: 10/6/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals					Field Notes	Total # of containers
—	65	1147	10/6/99	Vapor	Syringe	No Sample; #3 still plugged - cannot blow or purge																		Volume Purged in cc:	
VPSV-7B5	80	1202				X				X														320	
VPSV-7B6	105	1254				X				X														420	
—	120	1300		No Sample; Tip #6 still plugged - cannot blow or purge.																				—	
—	140	1303		No Sample; Tip #7 still plugged - cannot blow or purge.																				—	
—	160	1307		No Sample; Tip #8 still plugged - cannot blow or purge.																				—	

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

B.G. Randolph 10/6/99 1320 — 10-6-99 1320

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

Total # of containers:
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project #: 991007WI

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd, Suite 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/7/99 Page 1 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/7/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
Blank	—	0530	10/7/99	Vapor	Syringe	X				X										Volume Purged in cc:	
VPSV-787	20	0717				X				X										80	
VPSV-788	35	0735				X				X										140	
VPSV-789	50	0804				X				X										200	
VPSV-790 (Dup)	50	0834				X				X										200	
VPSV-791	60	0831				X				X										240	
VPSV-792	80	0918				X				X										320	
VPSV-793	95	0942				X				X										380	
VPSV-794	110	1006				X				X										440	
VPSV-795	125	1031				X				X										500	
VPSV-796 (Dup)	125	1055				X				X										500	
VPSV-797	140	1120				X				X										560	
VPSV-798	155	1146				X				X										620	
VPSV-799	20	1233				X				X										80	
VPSV-800	35	1301				X				X										140	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/7/99 1340		10-7-99 1340
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: _____
Chain of Custody seals Y/N/NA _____
Seals intact? Y/N/NA _____
Received good condition/cold _____

Notes:

Turn around time: _____

Sample disposal instructions: ___ *TEG Disposal @ $2.00 each* ___ *Return to client* ___ *Pickup*

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991007W1

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd, Ste. 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/7/99 Page 2 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL – Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/7/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals					Field Notes	Total # of containers
—	—	—	10/7/99	Vapor	Syringe																			Vol. Purged in sc: —	
—	50	1325	↓	No Sample; Tip #3 appears to be water (3) plugged – cannot purge, but can blow with difficulty																					

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

B.G. Randolph 10/7/99 1340 10-7-99 1340

Relinquished by: (signature) Date / Time Received by: (signature) Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project #: 991008WI

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd., Suite 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/8/99 Page 1 Of 1

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/8/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
Blank	—		10/8/99	Vapor	Syringe	X				X										Volume Purged in cc:	
VPSV-801	65	0704	10/8/99			X				X										260	
VPSV-802 (Dup)	65	0727				X				X										260	
VPSV-803	80	0751				X				X										320	
VPSV-804	95	0815				X				X										380	
VPSV-805	108	0838				X				X										435	
VPSV-806	118	0907				X				X										475	
—	20	0950		No Sample; Tip #1 still plugged; cannot blow or purge.																—	
VPSV-807	35	0954				X				X										140	
VPSV-808 (Dup)	35	1017				X				X										140	
VPSV-809	55	1042				X				X										220	
VPSV-810	75	1107				X				X										300	
VPSV-811	92	1135				X				X										370	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/8/99 1140	[signature]	10-8-99 1140
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers:
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991009W1

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd, Suite 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/9/99 Page 1 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/9/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals						Field Notes	Total # of containers
Blank	—	0632	10/9/99	Vapor	Syringe	X				X															Blame Purged in cc:	
VPSV-B12	25	0818				X				X															100	
VPSV-B13	40	0842				X				X															160	
VPSV-B14 (Dup)	40	0906				X				X															160	
VPSV-B15	55	0930				X				X															220	
VPSV-B16	70	0954				X				X															280	
VPSV-B17	90	1018				X				X															360	
—	115	1042		No Sample - Tip #6 still plugged; cannot blow or purge.																					—	
—	135	1043		No Sample - Tip #7 still plugged; cannot blow or purge.																					—	
VPSV-B18	155	1047				X				X															620	
VPSV-B19	180	1113				X				X															720	
VPSV-B20 (Dup)	180	1136				X				X															720	
VPSV-B21	195	1200				X				X															780	
VPSV-B22	25	1233				X				X															100	
VPSV-B23	40	1356				X				X															160	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/9/99 1530		10-9-99 1530
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers:
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project #: 991009W1

Outside Lab: _____

Client: Foster Wheeler
Address: 611 Anton Blvd, Suite 800
Costa Mesa, CA 92626
Phone: 714/444-5527 Fax: 714/444-55600

Date: 10/9/99 Page 2 Of 2
Client Project #: 1572.0289 Project Manager: B.G. Randolph
Location: JPL - Pasadena, CA
Collector: B.G. Randolph Date of Collection: 10/9/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
VPSV-824	60	1345	10/9/99	Vapor	Syringe	X				X										Vol. Purged in cc: 240	
VPSV-825	80	1410				X				X										320	
VPSV-826 (Dup)	80	1437				X				X										320	
VPSV-827	100	1501				X				X										400	
VPSV-828	120	1525				X				X										480	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/9/99 1530		10-9-99 1530
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers:
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

teg
Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991010WL

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd, Suite 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/10/99 Page 1 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/10/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
Blank	—	0521	10/10/99	Vapor	Syringe	X				X										Volume Purged in cc:	
VPSV-829	140	0723	10/10/99			X				X										560	
VPSV-830	155	0746				X				X										620	
VPSV-831	170	0813				X				X										680	
VPSV-832 (Dup.)	170	0857				X				X										680	
VPSV-833	185	0902				X				X										740	
VPSV-834	25	0925				X				X										100	
VPSV-835	45	0948				X				X										180	
VPSV-836	65	1013				X				X										260	
VPSV-837	80 (100)	1037				X				X										320	
VPSV-838 (Dup)	80	1102				X				X										320	
—	95	1050		No Sample; Tip #5 still water plugged — can blow but cannot purge.																—	
VPSV-839	110	1125				X				X										440	
VPSV-840	125	1149				X				X										500	
VPSV-841	140	1237				X				X										560	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/10/99 // 1405		1405 10-10-99
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: _____
Chain of Custody seals Y/N/NA _____
Seals intact? Y/N/NA _____
Received good condition/cold _____

Notes:

Turn around time: _____

Sample disposal instructions: ___ *TEG Disposal @ $2.00 each* ___ *Return to client* ___ *Pickup*

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project #: 991010W1

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd, Suite 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/10/99 Page 2 Of 2

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/10/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals					Field Notes	Total # of containers
—	—	—	10/10/99	Vapor	Syringe																			Volume Purged in cc:	
VPSV-842	155	1303	↓	↓	↓	X				X														620	
VPSV-843 (Blind Dup)	170	1327				X				X														680	
VPSV-844 (Dup)	170	1352				X				X														680	

Relinquished by: (signature) Date / Time: B.G. Randolph 10/10/99 1405

Received by: (signature) Date / Time: 10-10-99 1405

Relinquished by: (signature) Date / Time

Received by: (signature) Date / Time

Total # of containers:

Chain of Custody seals Y/N/NA

Seals intact? Y/N/NA

Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

Transglobal Environmental Geochemistry
432 N. Cedros Avenue
Solana Beach, CA 92075
(619) 793-0401 Fax: (619) 793-0404

Chain of Custody Record

TEG Project # : 991011W1

Outside Lab: _____

Client: Foster Wheeler

Address: 611 Anton Blvd, Suite 800
Costa Mesa, CA 92626

Phone: 714/444-5527 Fax: 714/444-5560

Date: 10/11/99 Page 1 Of 1

Client Project #: 1572.0289 Project Manager: B.G. Randolph

Location: JPL - Pasadena, CA

Collector: B.G. Randolph Date of Collection: 10/11/99

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCB's 8080	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers
Blank	—	0518	10/11/99	Vapor	Syringe	X				X										Volume Purged in cc:	
VPSV-845	20	0722				X				X										80	
VPSV-846	35	0745				X				X										140	
VPSV-847	50	0809				X				X										200	
VPSV-848	70	0836				X				X										280	
VPSV-849 (Resample)	85	~~0924~~ ~~0953~~ 0906				X				X										340	
VPSV-850 (Dup.)	85	0953				X				X										340	
VPSV-851	100	1016				X				X										400	
VPSV-852	110	1041				X				X										440	
VPSV-853	120	1107				X				X										480	
VPSV-854	130	1131				X				X										520	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
B.G. Randolph	10/11/99 1140		10-11-99 1140
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: _____
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold

Notes:

Turn around time: _____

Sample disposal instructions: ___ TEG Disposal @ $2.00 each ___ Return to client ___ Pickup

APPENDIX B-3

INITIAL THREE-POINT CALIBRATION DATA

HP Labs

INITIAL CALIBRATION (3-POINT)

WINNEBAGO 1
SUPPLY SOURCE: ACCUSTANDARD LOT# A7120160
INSTRUMENT: SHIMADZU GC14A FRONT

			LOW STANDARD				MID STANDARD				HIGH STANDARD				SUMMARY			
COMPOUND	DETECTOR	CAL DATE	RT	MASS	AREA	CF	RT	MASS	AREA	CF	RT	MASS	AREA	CF	AVE RT	AVE CF	SD	%RSD
CARBON TETRACHLORIDE	HALL	10/4/99	10.5	2.0	315	158	10.5	20.0	3,386	169	10.5	150	29,177	195	10.5	174	18.9	10.9%
CHLOROETHANE/BROMOMETHANE	HALL	10/4/99	4.9	4.0	445	111	4.9	40.0	4,858	121	4.8	300	43,285	144	4.9	126	16.9	13.5%
CHLOROFORM	HALL	10/4/99	9.2	2.0	627	314	9.2	20.0	5,702	285	9.2	150	45,808	305	9.2	301	14.6	4.9%
1,1-DICHLORO ETHANE	HALL	10/4/99	7.9	2.0	440	220	7.9	20.0	4,162	208	7.9	150	34,393	229	7.9	219	10.6	4.8%
1,2-DICHLORO ETHANE	HALL	10/4/99	10.6	2.0	603	302	10.6	20.0	5,589	279	10.6	150	43,484	290	10.6	290	11.0	3.8%
1,1-DICHLORO ETHENE	PID	10/4/99	6.1	2.0	18.9	9.5	6.1	20.0	175	8.8	6.1	150	1,263	8.4	6.1	8.90	0.5	5.9%
CIS-1,2-DICHLORO ETHENE	PID	10/4/99	8.8	2.0	26.4	13.2	8.8	20.0	242	12.1	8.8	150	1,716	11.4	8.8	12.2	0.9	7.3%
TRANS-1,2-DICHLORO ETHENE	PID	10/4/99	7.2	2.0	45.6	22.8	7.2	20.0	418	20.9	7.2	150	2,936	19.6	7.2	21.1	1.6	7.7%
DICHLOROMETHANE	HALL	10/4/99	6.8	2.0	424	212	6.8	20.0	4,251	213	6.8	150	38,390	256	6.8	227	25.2	11.1%
TETRACHLORO ETHENE	PID	10/4/99	16.1	2.0	27.8	13.9	16.1	20.0	264	13.2	16.1	150	1,870	12.5	16.1	13.2	0.7	5.4%
1,1,1,2-TETRACHLORO ETHANE/CHLOROBENZENE	HALL	10/4/99	18.2	4.0	646	162	18.2	40.0	6,917	173	18.2	300	52,472	175	18.2	170	7.2	4.3%
1,1,2,2-TETRACHLORO ETHANE	HALL	10/4/99	21.0	2.0	348	174	21.0	20.0	4,145	207	21.0	150	32,646	218	21.0	200	22.8	11.4%
1,1,1-TRICHLORO ETHANE	HALL	10/4/99	10.0	2.0	446	223	10.0	20.0	4,112	206	10.0	150	33,961	226	10.0	218	11.2	5.1%
1,1,2-TRICHLORO ETHANE	HALL	10/4/99	15.3	2.0	405	203	15.3	20.0	4,377	219	15.3	150	37,069	247	15.3	223	22.6	10.1%
TRICHLORO ETHENE	PID	10/4/99	11.8	2.0	34.0	17.0	11.8	20.0	298	14.9	11.8	150	2,088	13.9	11.8	15.3	1.6	10.3%
VINYL CHLORIDE	HALL	10/4/99	4.1	2.0	469	235	4.1	20.0	4,093	205	4.1	150	27,583	184	4.1	208	25.4	12.2%
TRICHLOROFLUOROMETHANE (FR11)	HALL	10/4/99	5.3	2.0	548	274	5.3	20.0	5,632	282	5.3	150	38,991	260	5.3	272	11.0	4.0%
DICHLORODIFLUOROMETHANE (FR12)	HALL	10/4/99	3.7	2.0	82.9	41.5	3.6	20.0	1,113	55.7	3.6	150	10,799	72.0	3.6	56.4	15.3	27.1%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	10/4/99	5.9	2.0	149	74.5	5.9	20.0	1,848	92.4	5.9	150	15,672	104	5.9	90.5	15.1	16.7%
BENZENE	PID	10/4/99	10.6	2.0	58.6	29.3	10.6	20.0	531	26.6	10.6	150	3,700	24.7	10.6	26.8	2.3	8.7%
ETHYLBENZENE	PID	10/4/99	18.1	2.0	67.5	33.8	18.1	20.0	577	28.9	18.1	150	3,847	25.6	18.1	29.4	4.1	13.9%
TOLUENE	PID	10/4/99	14.5	2.0	59.8	29.9	14.5	20.0	536	26.8	14.5	150	3,771	25.1	14.5	27.3	2.4	8.8%
m&p-XYLENES	PID	10/4/99	18.3	4.0	140	35.0	18.3	40.0	1,211	30.3	18.3	300	8,047	26.8	18.3	30.7	4.1	13.4%
o-XYLENE	PID	10/4/99	19.5	2.0	64.9	32.5	19.5	20.0	532	26.6	19.5	150	3,678	24.5	19.5	27.9	4.1	14.7%
CHLOROMETHANE	HALL	10/4/99	4.1	2.0	119	59.50	4.0	20.0	1,780	89.0	4.0	150	16,245	108	4.0	85.6	24.6	28.7%
1,4 DIFLUORO BENZENE	PID	10/4/99	11.1	2.0	26.3	13.2	11.1	20.0	226	11.3	11.1	150	1,521	10.1	11.1	11.5	1.5	13.2%
CHLOROBENZENE	PID	10/4/99	18.0	2.0	56.0	28.0	18.0	20.0	499	25.0	18.0	150	3,790	25.3	18.0	26.1	1.7	6.4%
4 BROMOFLUORO BENZENE	PID	10/4/99	21.3	2.0	92.6	46.3	21.3	20.0	837	41.9	21.3	150	5,990	39.9	21.3	42.7	3.3	7.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

SOIL GAS INITIAL LCS STANDARD REPORT (3-POINT CALIBRATION VERIFICATION)

LAB: WINN 1
SUPPLY SOURCE: ACCUSTANDARD LOT# A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

COMPOUND	DETECTOR	CAL DATE	AVE CF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	10/4/99	174	20	10.5	3,973	199	14.3%
CHLOROFORM	HALL	10/4/99	301	20	9.2	6,824	341	13.2%
1,1-DICHLORO ETHANE	HALL	10/4/99	219	20	8.0	4,658	233	6.3%
1,2-DICHLORO ETHANE	HALL	10/4/99	290	20	10.6	6,202	310	6.8%
1,1-DICHLORO ETHENE	PID	10/4/99	8.90	20	6.1	189	9.45	6.2%
CIS-1,2-DICHLORO ETHENE	PID	10/4/99	12.2	20	8.9	255	12.8	4.5%
TRANS-1,2-DICHLORO ETHENE	PID	10/4/99	21.1	20	7.2	441	22.1	4.5%
DICHLOROMETHANE	HALL	10/4/99	227	20	6.8	5,057	253	11.5%
TETRACHLORO ETHENE	PID	10/4/99	13.2	20	16.1	277	13.9	4.9%
1,1,1,2-TETRACHLORO ETHANE/CHLOROBENZENE	HALL	10/4/99	170	40	18.2	7,670	192	12.9%
1,1,2,2-TETRACHLORO ETHANE	HALL	10/4/99	200	20	21.1	4,541	227	13.8%
1,1,1-TRICHLORO ETHANE	HALL	10/4/99	218	20	10.0	4,686	234	7.3%
1,1,2-TRICHLORO ETHANE	HALL	10/4/99	223	20	15.3	4,991	250	12.0%
TRICHLORO ETHENE	PID	10/4/99	15.3	20	11.8	314	15.7	2.6%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	10/4/99	90.5	20	5.9	2,077	104	14.8%
BENZENE	PID	10/4/99	26.8	20	10.7	560	28.0	4.5%
ETHYLBENZENE	PID	10/4/99	29.4	20	18.1	616	30.8	4.8%
TOLUENE	PID	10/4/99	27.3	20	14.5	558	27.9	2.2%
m&p-XYLENES	PID	10/4/99	30.7	40	18.3	1,284	32.1	4.6%
o-XYLENE	PID	10/4/99	27.9	20	19.5	575	28.8	3.0%
1,4 DIFLUORO BENZENE	PID	10/4/99	11.5	20	11.1	230	11.5	0.0%
CHLOROBENZENE	PID	10/4/99	26.1	20	18.0	513	25.7	1.7%
4 BROMOFLUORO BENZENE	PID	10/4/99	42.7	20	21.3	876	43.8	2.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

APPENDIX B-4

DAILY OPENING, CLOSING, AND CONTINUING CALIBRATION VERIFICATION REPORTS

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/04/99
HP Labs Project #991004W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,805	190	9.5%	20	10.4	3,312	166	4.7%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	4,145	207	5.4%	20	7.9	3,935	197	10.2%
1,2-DICHLORO ETHANE	HALL	290	20	10.6	5,836	292	0.5%	20	10.6	5,551	278	4.4%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	190	9.50	6.7%	20	6.1	174	8.70	2.2%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	268	13.4	9.8%	20	8.8	233	11.7	4.5%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.2	461	23.1	9.2%	20	7.2	403	20.2	4.5%
TETRACHLORO ETHENE	PID	13.2	20	16.1	285	14.3	8.0%	20	16.0	247	12.4	6.4%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	3,991	200	8.6%	20	9.9	4,000	200	8.4%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.3	4,486	224	0.7%	20	15.2	4,251	213	4.6%
TRICHLORO ETHENE	PID	15.3	20	11.8	330	16.5	7.8%	20	11.8	281	14.1	8.2%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,016	100.8	11.4%	20	5.9	1,861	93.1	2.8%
BENZENE	PID	26.8	20	10.6	585	29.3	9.1%	20	10.6	503	25.2	6.2%
ETHYLBENZENE	PID	29.4	20	18.1	629	31.5	7.0%	20	18.1	506	25.3	13.9%
TOLUENE	PID	27.3	20	14.5	592	29.6	8.4%	20	14.5	497	24.9	9.0%
m&p-XYLENES	PID	30.7	40	18.3	1,323	33.1	7.7%	40	18.3	1,123	28.1	8.6%
o-XYLENE	PID	27.9	20	19.5	576	28.8	3.2%	20	19.5	486	24.3	12.9%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	249	12.5	8.3%	20	11.0	207	10.4	10.0%
CHLOROBENZENE	PID	26.1	20	18.0	566	28.3	8.4%	20	18.0	507	25.4	2.9%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.3	910	45.5	6.6%	20	21.3	780	39.0	8.7%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/05/99
HP Labs Project #991005W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,594	180	3.4%	20	10.4	3,819	191	9.9%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	4,623	231	5.5%	20	7.9	4,097	205	6.5%
1,2-DICHLORO ETHANE	HALL	290	20	10.6	6,628	331	14.2%	20	10.6	5,413	271	6.8%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	179	8.95	0.6%	20	6.0	163	8.15	8.4%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	244	12.2	0.0%	20	8.8	214	10.7	12.3%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.2	420	21.0	0.5%	20	7.2	375	18.8	11.1%
TETRACHLORO ETHENE	PID	13.2	20	16.1	264	13.2	0.0%	20	16.0	221	11.1	16.3%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	4,477	224	2.5%	20	9.9	4,071	204	6.8%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.3	4,948	247	11.0%	20	15.2	3,954	198	11.3%
TRICHLORO ETHENE	PID	15.3	20	11.8	300	15.0	2.0%	20	11.8	257	12.9	16.0%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,246	112.3	24.1%	20	5.9	1,756	87.8	3.0%
BENZENE	PID	26.8	20	10.7	532	26.6	0.7%	20	10.6	456	22.8	14.9%
ETHYLBENZENE	PID	29.4	20	18.1	525	26.3	10.7%	20	18.1	532	26.6	9.5%
TOLUENE	PID	27.3	20	14.5	533	26.7	2.4%	20	14.5	446	22.3	18.3%
m&p-XYLENES	PID	30.7	40	18.3	1,230	30.8	0.2%	40	18.3	1,070	26.8	12.9%
o-XYLENE	PID	27.9	20	19.5	533	26.7	4.5%	20	19.4	511	25.6	8.4%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	220	11.0	4.3%	20	11.0	189	9.5	17.8%
CHLOROBENZENE	PID	26.1	20	18.0	559	28.0	7.1%	20	18.0	423	21.2	19.0%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.3	850	42.5	0.5%	20	21.3	746	37.3	12.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/05/99
HP Labs Project #991005W1
WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)
ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			CONTINUING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,417	171	1.7%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	3,885	194	11.3%
1,2-DICHLORO ETHANE	HALL	290	20	10.6	5,544	277	4.5%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	176	8.80	1.1%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	231	11.6	5.3%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.2	395	19.8	6.4%
TETRACHLORO ETHENE	PID	13.2	20	16.1	309	15.5	17.0%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	3,769	188	13.7%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.3	4,026	201	9.6%
TRICHLORO ETHENE	PID	15.3	20	11.8	290	14.5	5.2%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	1,897	94.9	4.8%
BENZENE	PID	26.8	20	10.7	444	22.2	17.2%
ETHYLBENZENE	PID	29.4	20	18.1	514	25.7	12.6%
TOLUENE	PID	27.3	20	14.5	610	30.5	11.7%
m&p-XYLENES	PID	30.7	40	18.3	987	24.7	19.6%
o-XYLENE	PID	27.9	20	19.5	571	28.6	2.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	194	9.7	15.7%
CHLOROBENZENE	PID	26.1	20	18.0	459	23.0	12.1%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.3	763	38.2	10.7%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/06/99
HP Labs Project #991006W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,689	184	6.1%	20	10.5	3,084	154	11.3%
1,1-DICHLORO ETHANE	HALL	219	20	7.9	3,903	195	10.9%	20	8.0	4,610	231	5.2%
1,2-DICHLORO ETHANE	HALL	290	20	10.6	5,953	298	2.5%	20	10.7	4,907	245	15.5%
1,1-DICHLORO ETHENE	PID	8.90	20	6.0	177	8.85	0.6%	20	6.1	153	7.65	14.0%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.8	252	12.6	3.3%	20	8.9	213	10.7	12.7%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.2	430	21.5	1.9%	20	7.3	361	18.1	14.5%
TETRACHLORO ETHENE	PID	13.2	20	16.0	275	13.8	4.2%	20	16.1	233	11.7	11.7%
1,1,1-TRICHLORO ETHANE	HALL	218	20	9.9	4,412	221	1.1%	20	10.0	4,405	220	0.9%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.3	4,630	232	3.9%	20	15.4	4,242	212	4.8%
TRICHLORO ETHENE	PID	15.3	20	11.8	314	15.7	2.6%	20	11.9	263	13.2	14.1%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,196	109.8	21.3%	20	5.9	2,043	102.2	12.9%
BENZENE	PID	26.8	20	10.6	551	27.6	2.8%	20	10.7	471	23.6	12.1%
ETHYLBENZENE	PID	29.4	20	18.1	587	29.4	0.2%	20	18.2	528	26.4	10.2%
TOLUENE	PID	27.3	20	14.5	554	27.7	1.5%	20	14.6	467	23.4	14.5%
m&p-XYLENES	PID	30.7	40	18.3	1,252	31.3	2.0%	40	18.4	1,056	26.4	14.0%
o-XYLENE	PID	27.9	20	19.5	563	28.2	0.9%	20	19.6	478	23.9	14.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.0	235	11.8	2.2%	20	11.1	194	9.7	15.7%
CHLOROBENZENE	PID	26.1	20	18.0	546	27.3	4.6%	20	18.1	435	21.8	16.7%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.3	895	44.8	4.8%	20	21.5	737	36.9	13.7%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/06/99
HP Labs Project #991006W1
WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)
ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			CONTINUING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	4,071	204	17.1%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	4,475	224	2.1%
1,2-DICHLORO ETHANE	HALL	290	20	10.7	6,597	330	13.6%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	152	7.60	14.6%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	212	10.6	13.1%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.3	364	18.2	13.7%
TETRACHLORO ETHENE	PID	13.2	20	16.1	228	11.4	13.6%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	4,470	224	2.4%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.4	5,052	253	13.4%
TRICHLORO ETHENE	PID	15.3	20	11.9	263	13.2	14.1%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,127	106.4	17.5%
BENZENE	PID	26.8	20	10.7	467	23.4	12.9%
ETHYLBENZENE	PID	29.4	20	18.2	480	24.0	18.4%
TOLUENE	PID	27.3	20	14.6	471	23.6	13.7%
m&p-XYLENES	PID	30.7	40	18.4	1,065	26.6	13.3%
o-XYLENE	PID	27.9	20	19.6	470	23.5	15.8%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	193	9.7	16.1%
CHLOROBENZENE	PID	26.1	20	18.1	488	24.4	6.5%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.4	745	37.3	12.8%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/07/99
HP Labs Project #991007W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,996	200	15.0%	20	10.5	3,760	188	8.2%
1,1-DICHLORO ETHANE	HALL	219	20	7.9	4,463	223	1.8%	20	7.9	4,221	211	3.7%
1,2-DICHLORO ETHANE	HALL	290	20	10.6	6,612	331	13.9%	20	10.6	6,263	313	7.9%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	184	9.20	3.4%	20	6.1	189	9.45	6.2%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.8	261	13.1	7.0%	20	8.8	260	13.0	6.6%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.2	447	22.4	5.9%	20	7.2	447	22.4	5.9%
TETRACHLORO ETHENE	PID	13.2	20	16.1	286	14.3	8.3%	20	16.0	265	13.3	0.4%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	4,513	226	3.4%	20	10.0	4,519	226	3.5%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.3	4,862	243	9.1%	20	15.3	4,827	241	8.3%
TRICHLORO ETHENE	PID	15.3	20	11.8	323	16.2	5.6%	20	11.8	300	15.0	2.0%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,123	106.2	17.3%	20	5.9	2,147	107.4	18.6%
BENZENE	PID	26.8	20	10.6	570	28.5	6.3%	20	10.6	563	28.2	5.0%
ETHYLBENZENE	PID	29.4	20	18.1	603	30.2	2.6%	20	18.1	507	25.4	13.8%
TOLUENE	PID	27.3	20	14.5	576	28.8	5.5%	20	14.5	533	26.7	2.4%
m&p-XYLENES	PID	30.7	40	18.3	1,297	32.4	5.6%	40	18.3	1,214	30.4	1.1%
o-XYLENE	PID	27.9	20	19.5	575	28.8	3.0%	20	19.5	521	26.1	6.6%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	244	12.2	6.1%	20	11.0	233	11.7	1.3%
CHLOROBENZENE	PID	26.1	20	18.0	571	28.6	9.4%	20	18.0	565	28.3	8.2%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.3	935	46.8	9.5%	20	21.3	842	42.1	1.4%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP LAbs

QA/QC - CALIBRATION DATA

DATE: 10/07/99
HP Labs Project #991007W1
WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)
ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			CONTINUING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.6	4,154	208	19.5%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	4,855	243	10.8%
1,2-DICHLORO ETHANE	HALL	290	20	10.7	6,699	335	15.4%
1,1-DICHLORO ETHENE	PID	8.90	20	6.2	161	8.05	9.6%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	228	11.4	6.6%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.3	389	19.5	7.8%
TETRACHLORO ETHENE	PID	13.2	20	16.2	250	12.5	5.3%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.1	4,653	233	6.6%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.4	5,211	261	16.9%
TRICHLORO ETHENE	PID	15.3	20	11.9	281	14.1	8.2%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	6.0	2,152	107.6	18.9%
BENZENE	PID	26.8	20	10.7	501	25.1	6.5%
ETHYLBENZENE	PID	29.4	20	18.2	540	27.0	8.2%
TOLUENE	PID	27.3	20	14.6	500	25.0	8.4%
m&p-XYLENES	PID	30.7	40	18.4	1,146	28.7	6.7%
o-XYLENE	PID	27.9	20	19.6	499	25.0	10.6%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.2	207	10.4	10.0%
CHLOROBENZENE	PID	26.1	20	18.1	488	24.4	6.5%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.4	793	39.7	7.1%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/08/99
HP Labs Project #991008W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,616	181	4.0%	20	10.6	3,844	192	10.6%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	4,655	233	6.2%	20	8.0	3,906	195	10.9%
1,2-DICHLORO ETHANE	HALL	290	20	10.6	6,526	326	12.4%	20	10.7	6,707	335	15.5%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	165	8.25	7.3%	20	6.1	190	9.50	6.7%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	242	12.1	0.8%	20	8.9	278	13.9	13.9%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.2	408	20.4	3.3%	20	7.3	469	23.5	11.1%
TETRACHLORO ETHENE	PID	13.2	20	16.1	266	13.3	0.8%	20	16.2	305	15.3	15.5%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	4,612	231	5.6%	20	10.1	4,314	216	1.2%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.3	5,065	253	13.7%	20	15.4	5,294	265	18.8%
TRICHLORO ETHENE	PID	15.3	20	11.8	298	14.9	2.6%	20	11.9	344	17.2	12.4%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,245	112.3	24.0%	20	5.9	2,103	105.2	16.2%
BENZENE	PID	26.8	20	10.7	527	26.4	1.7%	20	10.8	611	30.6	14.0%
ETHYLBENZENE	PID	29.4	20	18.1	559	28.0	4.9%	20	18.2	640	32.0	8.8%
TOLUENE	PID	27.3	20	14.5	533	26.7	2.4%	20	14.7	617	30.9	13.0%
m&p-XYLENES	PID	30.7	40	18.3	1,209	30.2	1.5%	40	18.5	1,388	34.7	13.0%
o-XYLENE	PID	27.9	20	19.5	522	26.1	6.5%	20	19.7	619	31.0	10.9%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	226	11.3	1.7%	20	11.2	253	12.7	10.0%
CHLOROBENZENE	PID	26.1	20	18.0	525	26.3	0.6%	20	18.2	621	31.1	19.0%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.3	868	43.4	1.6%	20	21.5	957	47.9	12.1%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/09/99
HP Labs Project #991009W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.6	3,791	190	9.1%	20	10.5	3,418	171	1.7%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	4,693	235	7.1%	20	8.0	4,672	234	6.6%
1,2-DICHLORO ETHANE	HALL	290	20	10.7	6,570	329	13.2%	20	10.7	6,481	324	11.6%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	177	8.85	0.6%	20	6.1	200	10.00	12.4%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	267	13.4	9.4%	20	8.9	291	14.6	19.3%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.3	448	22.4	6.2%	20	7.3	491	24.6	16.4%
TETRACHLORO ETHENE	PID	13.2	20	16.2	298	14.9	12.9%	20	16.2	293	14.7	11.0%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.1	4,644	232	6.4%	20	10.1	4,749	237	8.8%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.4	5,069	253	13.8%	20	15.4	4,049	202	9.1%
TRICHLORO ETHENE	PID	15.3	20	11.9	327	16.4	6.9%	20	11.9	358	17.9	17.0%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,201	110.1	21.6%	20	5.9	2,199	110.0	21.5%
BENZENE	PID	26.8	20	10.7	581	29.1	8.4%	20	10.7	635	31.8	18.5%
ETHYLBENZENE	PID	29.4	20	18.2	664	33.2	12.9%	20	18.2	705	35.3	19.9%
TOLUENE	PID	27.3	20	14.6	585	29.3	7.1%	20	14.6	641	32.1	17.4%
m&p-XYLENES	PID	30.7	40	18.5	1,295	32.4	5.5%	40	18.5	1,434	35.9	16.8%
o-XYLENE	PID	27.9	20	19.7	571	28.6	2.3%	20	19.7	638	31.9	14.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.2	249	12.5	8.3%	20	11.2	265	13.3	15.2%
CHLOROBENZENE	PID	26.1	20	18.2	535	26.8	2.5%	20	18.2	591	29.6	13.2%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.5	942	47.1	10.3%	20	21.5	1,003	50.2	17.4%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/09/99
HP Labs Project #991009W1
WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)
ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			CONTINUING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,707	185	6.6%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	3,847	192	12.2%
1,2-DICHLORO ETHANE	HALL	290	20	10.7	5,584	279	3.8%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	160	8.00	10.1%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	232	11.6	4.9%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.3	395	19.8	6.4%
TETRACHLORO ETHENE	PID	13.2	20	16.2	256	12.8	3.0%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	4,078	204	6.6%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.4	4,665	233	4.7%
TRICHLORO ETHENE	PID	15.3	20	11.9	287	14.4	6.2%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,097	104.9	15.9%
BENZENE	PID	26.8	20	10.7	507	25.4	5.4%
ETHYLBENZENE	PID	29.4	20	18.3	531	26.6	9.7%
TOLUENE	PID	27.3	20	14.6	506	25.3	7.3%
m&p-XYLENES	PID	30.7	40	18.5	1,154	28.9	6.0%
o-XYLENE	PID	27.9	20	19.6	500	25.0	10.4%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	211	10.6	8.3%
CHLOROBENZENE	PID	26.1	20	18.2	511	25.6	2.1%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.5	798	39.9	6.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/10/99
HP Labs Project #991010W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,526	176	1.4%	20	10.6	3,721	186	7.0%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	3,960	198	9.6%	20	8.0	3,814	191	13.0%
1,2-DICHLORO ETHANE	HALL	290	20	10.7	5,604	280	3.5%	20	10.7	5,979	299	3.0%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	161	8.05	9.6%	20	6.1	150	7.50	15.7%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	244	12.2	0.0%	20	8.9	210	10.5	13.9%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.3	407	20.4	3.6%	20	7.3	348	17.4	17.5%
TETRACHLORO ETHENE	PID	13.2	20	16.2	267	13.4	1.1%	20	16.2	235	11.8	11.0%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	4,299	215	1.5%	20	10.1	4,148	207	5.0%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.4	4,400	220	1.3%	20	15.4	4,357	218	2.2%
TRICHLORO ETHENE	PID	15.3	20	11.9	303	15.2	1.0%	20	11.9	262	13.1	14.4%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,079	104.0	14.9%	20	5.9	1,810	90.5	0.0%
BENZENE	PID	26.8	20	10.7	535	26.8	0.2%	20	10.8	457	22.9	14.7%
ETHYLBENZENE	PID	29.4	20	18.2	595	29.8	1.2%	20	18.3	499	25.0	15.1%
TOLUENE	PID	27.3	20	14.6	538	26.9	1.5%	20	14.6	469	23.5	14.1%
m&p-XYLENES	PID	30.7	40	18.5	1,236	30.9	0.7%	40	18.5	1,076	26.9	12.4%
o-XYLENE	PID	27.9	20	19.6	535	26.8	4.1%	20	19.7	470	23.5	15.8%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	229	11.5	0.4%	20	11.2	193	9.7	16.1%
CHLOROBENZENE	PID	26.1	20	18.1	501	25.1	4.0%	20	18.2	463	23.2	11.3%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.5	865	43.3	1.3%	20	21.5	738	36.9	13.6%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/10/99
HP Labs Project #991010W1
WINNEBAGO 1

SUPPLY SOURCE: (CALIBRATION VERIFICATION)
ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			CONTINUING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,017	151	13.2%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	3,609	180	17.6%
1,2-DICHLORO ETHANE	HALL	290	20	10.7	5,226	261	10.0%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	167	8.35	6.2%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	236	11.8	3.3%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.3	347	17.4	17.8%
TETRACHLORO ETHENE	PID	13.2	20	16.1	250	12.5	5.3%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	3,796	190	13.1%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.3	4,236	212	4.9%
TRICHLORO ETHENE	PID	15.3	20	11.9	281	14.1	8.2%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	1,741	87.1	3.8%
BENZENE	PID	26.8	20	10.7	495	24.8	7.6%
ETHYLBENZENE	PID	29.4	20	18.2	517	25.9	12.1%
TOLUENE	PID	27.3	20	14.6	498	24.9	8.8%
m&p-XYLENES	PID	30.7	40	18.4	1,135	28.4	7.6%
o-XYLENE	PID	27.9	20	19.6	495	24.8	11.3%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	207	10.4	10.0%
CHLOROBENZENE	PID	26.1	20	18.1	519	26.0	0.6%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.4	799	40.0	6.4%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

HP Labs

QA/QC - CALIBRATION DATA

DATE: 10/11/99
HP Labs Project #991011W1
WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) ACCUSTANDARD LOT # A7120160
SUPPLY SOURCE: QUALITY CONTROL (CLOSING) ACCUSTANDARD LOT # A7120170
INSTRUMENT: SHIMADZU GC14A FRONT

			OPENING STANDARD					CLOSING STANDARD				
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	CF	%DIFF	MASS	RT	AREA	CF	%DIFF
CARBON TETRACHLORIDE	HALL	174	20	10.5	3,736	187	7.5%	20	10.6	3,951	198	13.7%
1,1-DICHLORO ETHANE	HALL	219	20	8.0	4,791	240	9.3%	20	8.0	4,621	231	5.5%
1,2-DICHLORO ETHANE	HALL	290	20	10.7	6,632	332	14.2%	20	10.7	6,813	341	17.3%
1,1-DICHLORO ETHENE	PID	8.90	20	6.1	166	8.30	6.7%	20	6.1	164	8.20	7.9%
CIS-1,2-DICHLORO ETHENE	PID	12.2	20	8.9	269	13.5	10.2%	20	8.9	259	13.0	6.1%
TRANS-1,2-DICHLORO ETHENE	PID	21.1	20	7.2	437	21.9	3.6%	20	7.3	415	20.8	1.7%
TETRACHLORO ETHENE	PID	13.2	20	16.2	298	14.9	12.9%	20	16.2	291	14.6	10.2%
1,1,1-TRICHLORO ETHANE	HALL	218	20	10.0	4,651	233	6.5%	20	10.1	4,780	239	9.5%
1,1,2-TRICHLORO ETHANE	HALL	223	20	15.4	5,064	253	13.6%	20	15.4	5,334	267	19.7%
TRICHLORO ETHENE	PID	15.3	20	11.9	335	16.8	9.5%	20	11.9	326	16.3	6.5%
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	HALL	90.5	20	5.9	2,183	109.2	20.6%	20	5.9	2,088	104.4	15.4%
BENZENE	PID	26.8	20	10.7	589	29.5	9.9%	20	10.7	569	28.5	6.2%
ETHYLBENZENE	PID	29.4	20	18.2	636	31.8	8.2%	20	18.3	627	31.4	6.6%
TOLUENE	PID	27.3	20	14.6	602	30.1	10.3%	20	14.6	590	29.5	8.1%
m&p-XYLENES	PID	30.7	40	18.4	1,355	33.9	10.3%	40	18.5	1,356	33.9	10.4%
o-XYLENE	PID	27.9	20	19.6	597	29.9	7.0%	20	19.7	616	30.8	10.4%
1,4 DIFLUORO BENZENE	PID	11.5	20	11.1	255	12.8	10.9%	20	11.2	243	12.2	5.7%
CHLOROBENZENE	PID	26.1	20	18.1	598	29.9	14.6%	20	18.2	608	30.4	16.5%
4 BROMOFLUORO BENZENE	PID	42.7	20	21.5	967	48.4	13.2%	20	21.5	950	47.5	11.2%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
25	20	10/19/98	VPSV-523	ND	ND	ND	ND	ND
25	20	3/8/99	VPSV-641	ND	ND	ND	ND	ND
25	20	10/4/99	VPSV-749	ND	ND	ND	ND	ND
25	40	10/19/98	VPSV-524	ND	ND	ND	ND	ND
25	40	3/8/99	VPSV-642	ND	ND	ND	ND	ND
25	40	10/4/99	VPSV-750	ND	ND	ND	ND	ND
25	60	10/19/98	NS	P	P	P	P	P
25	60	3/8/99	NS	P	P	P	P	P
25	60	10/4/99	NS	P	P	P	P	P
25	85	10/19/98	VPSV-525	83	ND	ND	ND	ND
25	85	3/8/99	VPSV-643	14	ND	ND	ND	ND
25	85	10/4/99	NS	P	P	P	P	P
25	100	10/19/98	NS	P	P	P	P	P
25	100	3/8/99	NS	P	P	P	P	P
25	100	10/4/99	VPSV-751	ND	ND	ND	ND	ND
25	120	10/19/98	VPSV-526	119	ND	ND	ND	ND
25	120	3/8/99	VPSV-644	ND	ND	ND	ND	ND
25	120	10/4/99	VPSV-752	ND	ND	ND	ND	ND
25	145	10/19/98	VPSV-527	286 J	152 J	ND	ND	ND
25	145	10/19/98	VPSV-528(DUP)	285	147	ND	ND	ND
25	145	3/8/99	VPSV-645	4.1	ND	5.5	ND	ND
25	145	3/8/99	VPSV-646(DUP)	3.9	ND	5.6	ND	ND
25	145	10/4/99	VPSV-753	ND	ND	ND	ND	ND
25	145	10/4/99	VPSV-754(DUP)	ND	ND	ND	ND	ND
25	165	10/19/98	VPSV-529	217 J	233 J	ND	ND	ND
25	165	3/8/99	NS	W	W	W	W	W
25	165	10/4/99	NS	P	P	P	P	P
25	180	10/19/98	VPSV-530	118	133	ND	ND	ND
25	180	3/8/99	VPSV-647	ND	ND	1.1	ND	ND
25	180	10/4/99	VPSV-755	ND	2.2	ND	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
25	190	10/19/98	VPSV-531	124	71	1.6	ND	ND
25	190	3/8/99	VPSV-648	ND	ND	ND	ND	ND
25	190	10/4/99	VPSV-756	ND	ND	ND	ND	ND
26	20	10/19/98	NS	P	P	P	P	P
26	20	3/8/99	NS	P	P	P	P	P
26	20	10/4/99	NS	P	P	P	P	P
26	35	10/19/98	VPSV-532	ND	ND	ND	ND	ND
26	35	3/8/99	VPSV-649	ND	ND	ND	ND	ND
26	35	10/4/99	VPSV-757	10	ND	1.5	ND	ND
26	55	10/19/98	VPSV-533	ND	ND	ND	3.9	ND
26	55	10/19/98	VPSV-534(DUP)	ND	ND	ND	4.2	ND
26	55	3/8/99	NS	P	P	P	P	P
26	55	10/4/99	NS	P	P	P	P	P
26	80	10/19/98	VPSV-535	74	ND	4.4	6.7	ND
26	80	3/8/99	NS	W	W	W	W	W
26	80	10/4/99	NS	P	P	P	P	P
26	100	10/19/98	NS	P	P	P	P	P
26	100	3/8/99	NS	P	P	P	P	P
26	100	10/4/99	NS	P	P	P	P	P
26	115	10/19/98	VPSV-536	153 J	ND	1.2	3.0	ND
26	115	3/8/99	VPSV-650	50	ND	ND	ND	ND
26	115	10/4/99	VPSV-758	1.7	ND	ND	ND	ND
26	140	10/19/98	VPSV-537	167 J	7.9	ND	1.6	ND
26	140	3/8/99	VPSV-651	2.5	ND	ND	ND	ND
26	140	3/8/99	VPSV-652(DUP)	2.7	ND	ND	ND	ND
26	140	10/4/99	VPSV-759	5.4	ND	1.9	ND	ND
26	140	10/4/99	VPSV-760(DUP)	8.1	ND	1.7	ND	ND
26	160	10/20/98	VPSV-538	81	ND	ND	ND	ND
26	160	3/8/99	VPSV-653	2.8	ND	ND	ND	ND
26	160	10/5/99	VPSV-761	5.0	2.2	1.8	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
26	180	10/20/98	VPSV-539	72	ND	ND	ND	ND
26	180	3/9/99	VPSV-654	ND	ND	2.6	ND	ND
26	180	10/5/99	VPSV-762	2.9	3.0	6.5	ND	ND
26	195	10/20/98	VPSV-540	83	ND	1.4	ND	ND
26	195	10/20/98	VPSV-541(DUP)	95	ND	1.3	ND	ND
26	195	3/9/99	VPSV-655	ND	ND	1.7	ND	ND
26	195	10/5/99	NS	P	P	P	P	P
27	20	10/20/98	VPSV-542	ND	ND	ND	ND	ND
27	20	3/9/99	VPSV-656	ND	ND	ND	ND	ND
27	20	10/5/99	VPSV-763	ND	ND	ND	ND	ND
27	35	10/20/98	NS	W	W	W	W	W
27	35	3/9/99	NS	W	W	W	W	W
27	35	10/5/99	NS	W	W	W	W	W
27	60	10/20/98	VPSV-543	ND	49	ND	ND	ND
27	60	3/9/99	VPSV-657	ND	5.1	ND	ND	ND
27	60	3/9/99	VPSV-658(DUP)	ND	5.4	ND	ND	ND
27	60	10/5/99	VPSV-764	ND	2.5	ND	ND	ND
27	85	10/20/98	VPSV-544	7.4	61	ND	ND	ND
27	85	3/9/99	VPSV-659	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-765	ND	ND	ND	ND	ND
27	85	10/5/99	VPSV-766(DUP)	ND	ND	ND	ND	ND
27	100	10/20/98	VPSV-545	193 J	188 J	ND	ND	ND
27	100	10/20/98	VPSV-546(DUP)	203	169	ND	ND	ND
27	100	3/9/99	VPSV-660	11	ND	ND	ND	ND
27	100	10/5/99	VPSV-767	5.2	ND	ND	ND	ND
27	120	10/20/98	VPSV-547	110	215	ND	ND	ND
27	120	3/9/99	VPSV-661	ND	ND	ND	ND	ND
27	120	10/5/99	VPSV-768	1.3	ND	ND	ND	ND
27	140	10/20/98	VPSV-548	161	268	1.2	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
27	140	3/9/99	VPSV-662	60	19	ND	ND	ND
27	140	10/5/99	VPSV-769	6.2	1.2	ND	ND	ND
27	160	10/20/98	VPSV-549	189	212	ND	ND	ND
27	160	3/9/99	VPSV-663	ND	ND	ND	ND	ND
27	160	3/9/99	VPSV-664(DUP)	ND	ND	ND	ND	ND
27	160	10/5/99	VPSV-770	ND	ND	ND	ND	ND
27	180	10/20/98	VPSV-550	155	265	ND	ND	ND
27	180	3/9/99	NS	P	P	P	P	P
27	180	10/5/99	VPSV-771	12	2.1	4.0	ND	ND
27	180	10/5/99	VPSV-772(DUP)	12	1.9	4.5	ND	ND
27	205	10/20/98	VPSV-551	413 J	133	ND	ND	ND
27	205	10/20/98	VPSV-552(DUP)	446	130	ND	ND	ND
27	205	3/9/99	VPSV-665	9.5	ND	2.1	ND	ND
27	205	10/5/99	VPSV-773	4.8	2.2	ND	ND	ND
28	20	10/21/98	VPSV-565	ND	ND	ND	ND	ND
28	20	3/11/99	VPSV-675	ND	ND	ND	ND	ND
28	20	3/11/99	VPSV-676(DUP)	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-783	ND	ND	ND	ND	ND
28	20	10/6/99	VPSV-784(DUP)	ND	ND	ND	ND	ND
28	45	10/21/98	VPSV-566	ND	ND	ND	ND	ND
28	45	3/11/99	NS	P	P	P	P	P
28	45	10/6/99	NS	P	P	P	P	P
28	65	10/21/98	NS	P	P	P	P	P
28	65	3/11/99	NS	P	P	P	P	P
28	65	10/6/99	NS	P	P	P	P	P
28	80	10/21/98	VPSV-567	22	ND	ND	ND	ND
28	80	3/11/99	VPSV-677	ND	ND	ND	ND	ND
28	80	10/6/99	VPSV-785	ND	ND	ND	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
28	105	10/21/98	VPSV-568	210 J	127	ND	ND	ND
28	105	3/11/99	VPSV-678	ND	ND	ND	ND	ND
28	105	10/6/99	VPSV-786	ND	ND	ND	ND	ND
28	120	10/21/98	VPSV-569	438 J	429 J	ND	ND	ND
28	120	10/21/98	VPSV-570(DUP)	451 J	403 J	ND	ND	ND
28	120	3/11/99	NS	P	P	P	P	P
28	120	10/6/99	NS	P	P	P	P	P
28	140	10/21/98	NS	P	P	P	P	P
28	140	3/11/99	NS	P	P	P	P	P
28	140	10/6/99	NS	P	P	P	P	P
28	160	10/21/98	NS	P	P	P	P	P
28	160	3/11/99	NS	P	P	P	P	P
28	160	10/6/99	NS	P	P	P	P	P
32	25	10/26/98	VPSV-597	ND	ND	ND	ND	ND
32	25	3/16/99	VPSV-711	ND	ND	ND	ND	ND
32	25	10/9/99	VPSV-812	ND	ND	ND	ND	ND
32	40	10/26/98	VPSV-598	ND	ND	ND	ND	ND
32	40	3/16/99	VPSV-712	ND	ND	ND	ND	ND
32	40	3/16/99	VPSV-713(DUP)	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-813	ND	ND	ND	ND	ND
32	40	10/9/99	VPSV-814(DUP)	ND	ND	ND	ND	ND
32	55	10/26/98	VPSV-599	ND	ND	ND	ND	ND
32	55	10/26/98	VPSV-600(DUP)	ND	ND	ND	ND	ND
32	55	3/16/99	VPSV-714	ND	ND	ND	ND	ND
32	55	10/9/99	VPSV-815	ND	ND	ND	ND	ND
32	70	10/26/98	VPSV-601	ND	ND	ND	ND	ND
32	70	3/16/99	VPSV-715	ND	ND	ND	ND	ND
32	70	10/9/99	VPSV-816	ND	3.9	ND	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
32	90	10/26/98	VPSV-602	ND	ND	ND	ND	ND
32	90	3/16/99	VPSV-716	ND	ND	ND	ND	ND
32	90	10/9/99	VPSV-817	ND	ND	ND	ND	ND
32	115	10/26/98	NS	P	P	P	P	P
32	115	3/16/99	NS	P	P	P	P	P
32	115	10/9/99	NS	P	P	P	P	P
32	135	10/26/98	VPSV-603	ND	ND	ND	ND	ND
32	135	3/16/99	NS	P	P	P	P	P
32	135	10/9/99	NS	P	P	P	P	P
32	155	10/26/98	VPSV-604	14	193 J	ND	ND	ND
32	155	3/16/99	VPSV-717	6.8	259	ND	ND	ND
32	155	3/16/99	VPSV-718(DUP)	7.5	257	ND	ND	ND
32	155	10/9/99	VPSV-818	28	78	ND	ND	ND
32	180	10/26/98	VPSV-605	110	144	4.9	ND	ND
32	180	10/26/98	VPSV-606(DUP)	125	138	6.4	ND	ND
32	180	3/16/99	VPSV-719	ND	ND	2.1	ND	ND
32	180	10/9/99	VPSV-819	1.6	ND	ND	ND	ND
32	180	10/9/99	VPSV-820(DUP)	1.7	ND	ND	ND	ND
32	195	10/26/98	VPSV-607	88	193 J	3.2	ND	ND
32	195	3/16/99	VPSV-720	3.5	ND	8.8	ND	ND
32	195	10/9/99	VPSV-821	ND	ND	ND	ND	1.5 (Chloroform)
33	20	10/21/98	VPSV-553	ND	ND	ND	ND	ND
33	20	3/11/99	VPSV-666	ND	ND	ND	ND	ND
33	20	10/6/99	VPSV-774	ND	2.3	ND	ND	ND
33	40	10/21/98	VPSV-554	12	87	6.3	25	ND
33	40	3/11/99	VPSV-667	7.1	102	5.4	21	ND
33	40	10/6/99	VPSV-775	3.7	67	8.9	47	ND
33	60	10/21/98	VPSV-555	89	1.3	4.3	12	ND
33	60	3/11/99	VPSV-668	11	ND	2.5	8.8	ND
33	60	10/6/99	VPSV-776	6.6	2.4	1.7	4.8	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
33	85	10/21/98	VPSV-556	140	ND	2.8	8.3	ND
33	85	3/11/99	VPSV-669	44	ND	1.5	5.6	ND
33	85	3/11/99	VPSV-670(DUP)	40	ND	1.1	5.1	ND
33	85	10/6/99	VPSV-777	19	4.5	ND	3.3	ND
33	85	10/6/99	VPSV-778(DUP)	22	4.7	ND	3.3	ND
33	105	10/21/98	VPSV-557	191 J	ND	2.4	6.8	ND
33	105	10/21/98	VPSV-558(DUP)	204	ND	2.5	7.4	ND
33	105	3/11/99	VPSV-671	32	ND	ND	ND	ND
33	105	10/6/99	VPSV-779	38	13	ND	4.4	ND
33	120	10/21/98	VPSV-559	141	ND	2.2	6.4	ND
33	120	3/11/99	VPSV-672	57	ND	ND	3.7	ND
33	120	10/6/99	VPSV-780	64	17	1.1	4.1	ND
33	140	10/21/98	VPSV-560	179 J	ND	ND	7.9	ND
33	140	3/11/99	VPSV-673	ND	ND	ND	ND	ND
33	140	10/6/99	VPSV-781	8.6	3.3	ND	ND	2.9 (Chloroform)
33	160	10/21/98	VPSV-561	94	ND	ND	8.6	ND
33	160	3/11/99	NS	W	W	W	W	W
33	160	10/6/99	NS	P	P	P	P	P
33	180	10/21/98	VPSV-562	67	ND	ND	6.8	ND
33	180	3/11/99	NS	W	W	W	W	W
33	180	10/6/99	NS	P	P	P	P	P
33	200	10/21/98	VPSV-563	78	ND	1.3	5.9	ND
33	200	10/21/98	VPSV-564(DUP)	77	ND	1.1	5.8	ND
33	200	3/11/99	VPSV-674	1.3	ND	ND	ND	ND
33	200	10/6/99	VPSV-782	ND	ND	ND	ND	ND
34	20	10/22/98	VPSV-583	ND	ND	ND	ND	ND
34	20	3/12/99	VPSV-691	ND	ND	ND	ND	ND
34	20	10/7/99	VPSV-799	ND	ND	ND	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE

(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
34	35	10/22/98	VPSV-584	ND	ND	ND	ND	ND
34	35	3/12/99	VPSV-692	ND	ND	ND	ND	ND
34	35	10/7/99	VPSV-800	ND	ND	ND	ND	ND
34	50	10/22/98	VPSV-585	ND	ND	ND	ND	ND
34	50	3/12/99	VPSV-693	ND	ND	ND	ND	ND
34	50	3/12/99	VPSV-694(DUP)	ND	ND	ND	ND	ND
34	50	10/5/99	NS	W	W	W	W	W
34	65	10/22/98	VPSV-586	4.5	ND	ND	ND	ND
34	65	3/15/99	VPSV-695	ND	ND	ND	ND	ND
34	65	10/8/99	VPSV-801	ND	ND	ND	ND	ND
34	65	10/8/99	VPSV-802(DUP)	ND	ND	ND	ND	ND
34	80	10/22/98	VPSV-587	6.1	ND	ND	ND	ND
34	80	10/22/98	VPSV-588(DUP)	6.0	ND	ND	ND	ND
34	80	3/15/99	VPSV-696	ND	ND	ND	ND	ND
34	80	10/8/99	VPSV-803	ND	ND	ND	ND	ND
34	95	10/23/98	VPSV-589	28	ND	ND	ND	ND
34	95	3/15/99	VPSV-697	ND	ND	ND	ND	ND
34	95	10/8/99	VPSV-804	ND	ND	ND	ND	ND
34	108	10/23/98	VPSV-590	157 J	62	ND	ND	ND
34	108	3/15/99	VPSV-698	43	ND	ND	ND	ND
34	108	10/8/99	VPSV-805	8.2	ND	ND	ND	ND
34	118	10/23/98	VPSV-591	154 J	82	ND	ND	ND
34	118	3/15/99	VPSV-699	111	ND	ND	ND	ND
34	118	3/15/99	VPSV-700(DUP)	116	ND	ND	ND	ND
34	118	10/8/99	VPSV-806	52	2.5	ND	1.3	5.1 (Chloroform)
35	20	10/22/98	VPSV-571	ND	ND	ND	ND	ND
35	20	3/12/99	VPSV-679	ND	ND	ND	ND	ND
35	20	10/7/99	VPSV-787	ND	ND	ND	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
35	35	10/22/98	VPSV-572	ND	ND	ND	ND	ND
35	35	3/12/99	VPSV-680	ND	ND	ND	ND	ND
35	35	10/7/99	VPSV-788	ND	ND	ND	ND	ND
35	50	10/22/98	VPSV-573	ND	ND	ND	ND	ND
35	50	3/12/99	VPSV-681	ND	ND	ND	ND	ND
35	50	3/12/99	VPSV-682(DUP)	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-789	ND	ND	ND	ND	ND
35	50	10/7/99	VPSV-791(DUP)	ND	ND	ND	ND	ND
35	60	10/22/98	VPSV-574	ND	ND	ND	ND	ND
35	60	3/12/99	VPSV-683	ND	ND	ND	ND	ND
35	60	10/7/99	VPSV-790	ND	ND	ND	ND	ND
35	80	10/22/98	VPSV-575	18	36	ND	ND	ND
35	80	10/22/98	VPSV-576(DUP)	20	37	ND	ND	ND
35	80	3/12/99	VPSV-684	ND	ND	ND	ND	ND
35	80	10/7/99	VPSV-792	ND	ND	ND	ND	ND
35	95	10/22/98	VPSV-577	45	48	ND	ND	ND
35	95	3/12/99	VPSV-685	6.2	4.9	ND	ND	ND
35	95	10/7/99	VPSV-793	1.6	ND	ND	ND	ND
35	110	10/22/98	VPSV-578	65	47	ND	ND	ND
35	110	3/12/99	VPSV-686	1.5	ND	ND	ND	ND
35	110	10/7/99	VPSV-794	ND	ND	ND	ND	ND
35	125	10/22/98	VPSV-579	74	54	ND	ND	ND
35	125	3/12/99	VPSV-687	1.8	ND	ND	ND	ND
35	125	3/12/99	VPSV-688(DUP)	1.5	ND	ND	ND	ND
35	125	10/7/99	VPSV-795	ND	1.5	ND	ND	ND
35	125	10/7/99	VPSV-796(DUP)	ND	1.5	ND	ND	ND
35	140	10/22/98	VPSV-580	125	64	ND	ND	ND
35	140	3/12/99	VPSV-689	17	4.2	ND	ND	ND
35	140	10/7/99	VPSV-797	13	19	ND	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE

(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
35	155	10/22/98	VPSV-581	59	61	2.4	ND	ND
35	155	10/22/98	VPSV-582(DUP)	63	68	2.8	ND	ND
35	155	3/12/99	VPSV-690	3.2	ND	7.7	ND	ND
35	155	10/7/99	VPSV-798	13	17	9.0	ND	ND
36	20	10/23/98	NS	P	P	P	P	P
36	20	3/17/99	NS	P	P	P	P	P
36	20	10/8/99	NS	P	P	P	P	P
36	35	10/23/98	VPSV-592	9.2	ND	ND	ND	ND
36	35	3/17/99	VPSV-733	149	ND	18	ND	37 (1,1,1-TCA)
36	35	10/8/99	VPSV-807	48	ND	27	2.0	2.6 (Chloroform) 33 (1,1,1-TCA)
36	35	10/8/99	VPSV-808(DUP)	49	ND	20	2.2	2.2 (Chloroform) 32 (1,1,1-TCA)
36	55	10/23/98	VPSV-593	17	ND	ND	ND	1.1 (Chloroform)
36	55	10/23/98	VPSV-594(DUP)	16	ND	ND	ND	1.1 (Chloroform)
36	55	3/17/99	VPSV-734	191 J	ND	2.9	ND	11 (1,1,1-TCA)
36	55	10/8/99	VPSV-809	153	1.3	61	9.2	1.1 (Chloroform) 98 (1,1,1-TCA
36	75	10/23/98	VPSV-595	22	31	ND	ND	3.8 (Chloroform)
36	75	3/17/99	VPSV-735	4.7	ND	ND	ND	1.0 (Chloroform)
36	75	3/17/99	VPSV-736(DUP)	4.6	ND	ND	ND	1.2 (Chloroform)
36	75	10/8/99	VPSV-810	30	3.9	2.2	2.3	12 (Chloroform) 7.6 (1,1,1-TCA) 1.2 (Freon 11)
36	92	10/23/98	VPSV-596	20	29	ND	ND	4.0 (Chloroform)
36	92	3/17/99	VPSV-737	11	ND	ND	ND	2.1 (Chloroform)
36	92	10/8/99	VPSV-811	20	5.8	1.4	2.6	15 (Chloroform) 1.3 (1,1,1-TCA)

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
37	25	10/26/98	VPSV-608	ND	ND	ND	ND	ND
37	25	3/16/99	VPSV-721	ND	ND	ND	ND	ND
37	25	10/9/99	VPSV-822	ND	ND	ND	ND	ND
37	40	10/26/98	VPSV-609	24	ND	1.2	ND	ND
37	40	3/16/99	VPSV-722	4.3	ND	1.7	ND	ND
37	40	10/9/99	VPSV-823	2.1	ND	ND	ND	ND
37	60	10/26/98	VPSV-610	43	ND	ND	ND	ND
37	60	3/16/99	VPSV-723	4.0	ND	ND	ND	ND
37	60	3/16/99	VPSV-724(DUP)	3.8	ND	ND	ND	ND
37	60	10/9/99	VPSV-824	ND	ND	ND	ND	ND
37	80	10/26/98	VPSV-611	64	51	2.3	ND	ND
37	80	10/26/98	VPSV-612(DUP)	60	48	2.4	ND	ND
37	80	3/17/99	VPSV-725	1.1	ND	1.6	ND	ND
37	80	10/9/99	VPSV-825	1.6	ND	ND	ND	ND
37	80	10/9/99	VPSV-826(DUP)	1.9	ND	ND	ND	ND
37	100	10/26/98	VPSV-613	62	57	3.5	ND	ND
37	100	3/17/99	VPSV-726	10	10	5.1	ND	ND
37	100	10/9/99	VPSV-827	12	1.8	3.1	ND	1.6 (Chloroform)
37	120	10/27/98	VPSV-614	32	ND	6.1	ND	ND
37	120	3/17/99	VPSV-727	1.9	ND	2.6	ND	ND
37	120	10/9/99	VPSV-828	19	12	4.0	2.6	3.6 (Chloroform) 1.6 (Freon 11)
37	140	10/27/98	VPSV-615	30	37	4.5	ND	ND
37	140	3/17/99	VPSV-728	3.0	ND	1.8	ND	ND
37	140	10/10/99	VPSV-829	3.0	1.8	ND	1.7	ND
37	155	10/27/98	VPSV-616	26	47	2.3	ND	ND
37	155	3/17/99	VPSV-729	4.4	ND	1.4	ND	ND
37	155	3/17/99	VPSV-730(DUP)	4.5	ND	1.8	ND	ND
37	155	10/10/99	VPSV-830	6.0	1.5	1.6	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
37	170	10/27/98	VPSV-617	23	38	3.0	ND	ND
37	170	3/17/99	VPSV-731	5.8	5.4	1.4	ND	ND
37	170	10/10/99	VPSV-831	6.5	2.0	2.3	1.9	1.1 (Freon 11)
37	170	10/10/99	VPSV-832(DUP)	6.4	2.1	1.9	2.4	1.1 (Freon 11)
37	185	10/27/98	VPSV-618	12	6.5	2.2	ND	ND
37	185	10/27/98	VPSV-619(DUP)	12	6.8	1.7	ND	ND
37	185	3/17/99	VPSV-732	9.3	18	3.5	ND	ND
37	185	10/10/99	VPSV-833	7.4	2.8	4.4	1.8	ND
38	25	10/27/98	VPSV-620	ND	ND	ND	ND	ND
38	25	3/18/99	VPSV-738	ND	ND	ND	ND	ND
38	25	10/10/99	VPSV-834	ND	ND	ND	ND	ND
38	45	10/27/98	VPSV-621	5.6	ND	ND	ND	ND
38	45	3/18/99	VPSV-739	ND	ND	ND	ND	ND
38	45	10/10/99	VPSV-835	ND	ND	ND	ND	ND
38	65	10/27/98	VPSV-622	15	57	2.2	ND	ND
38	65	3/18/99	VPSV-740	ND	ND	ND	ND	ND
38	65	10/10/99	VPSV-836	ND	ND	ND	ND	ND
38	80	10/27/98	VPSV-623	11	74	1.6	ND	ND
38	80	10/27/98	VPSV-624(DUP)	15	56	2.1	ND	ND
38	80	3/18/99	VPSV-741	ND	ND	1.4	ND	ND
38	80	3/18/99	VPSV-742(DUP)	ND	ND	1.3	ND	ND
38	80	10/10/99	VPSV-837	ND	ND	ND	ND	ND
38	80	10/10/99	VPSV-838(DUP)	ND	ND	ND	ND	ND
38	95	10/27/98	NS	W	W	W	W	W
38	95	3/18/99	NS	W	W	W	W	W
38	95	10/10/99	NS	W	W	W	W	W
38	110	10/27/98	VPSV-625	13	43	1.4	ND	ND
38	110	3/18/99	VPSV-743	ND	ND	ND	ND	ND
38	110	10/10/99	VPSV-839	9.3	5.8	1.7	ND	1.7 (Chloroform) 1.2 (Freon 11)

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
38	125	10/27/98	VPSV-626	18	81	1.8	ND	ND
38	125	3/18/99	VPSV-744	2.9	ND	ND	ND	ND
38	125	10/10/99	VPSV-840	3.2	3.6	ND	ND	ND
38	140	10/27/98	VPSV-627	18	67	1.9	ND	ND
38	140	3/18/99	VPSV-745	8.6	4.5	1.9	ND	ND
38	140	10/10/99	VPSV-841	6.6	3.4	ND	ND	1.9 (Chloroform) 1.6 (Freon 11)
38	155	10/27/98	VPSV-628	17	75	1.8	ND	ND
38	155	3/18/99	VPSV-746	4.9	5.0	2.0	ND	ND
38	155	10/10/99	VPSV-842	6.7	3.6	1.2	1.8	1.1 (Chloroform)
38	170	10/27/98	VPSV-629	22	103	3.0	ND	ND
38	170	10/27/98	VPSV-630(DUP)	24	112	3.4	ND	ND
38	170	3/18/99	VPSV-747	12	24	4.4	ND	ND
38	170	3/18/99	VPSV-748(DUP)	11	24	4.4	ND	ND
38	170	10/10/99	VPSV-843	8.1	4.9	3.9	1.4	1.1 (Freon 11)
38	170	10/10/99	VPSV-844(DUP)	5.6	3.5	2.9	1.3	1.1 (Freon 11
39	20	10/28/98	VPSV-631	ND	ND	ND	ND	ND
39	20	3/15/99	VPSV-701	ND	ND	ND	ND	ND
39	20	10/11/99	VPSV-845	ND	ND	ND	ND	ND
39	35	10/28/98	VPSV-632	ND	ND	ND	ND	ND
39	35	3/15/99	VPSV-702	ND	ND	ND	ND	ND
39	35	10/11/99	VPSV-846	ND	ND	ND	ND	ND
39	50	10/28/98	VPSV-633	ND	ND	ND	ND	ND
39	50	3/15/99	VPSV-703	ND	ND	ND	ND	ND
39	50	10/11/99	VPSV-847	ND	ND	ND	ND	ND
39	70	10/28/98	VPSV-634	ND	ND	ND	ND	ND
39	70	3/15/99	VPSV-704	ND	ND	ND	ND	ND
39	70	10/11/99	VPSV-848	ND	ND	ND	ND	ND

APPENDIX C

SUMMARY OF SOIL-VAPOR RESULTS
ALL LONG-TERM SAMPLING EVENTS COMPLETED TO DATE
(Concentrations in µg/L–vapor)

Soil Vapor Well Number	Depth (ft bgs)	Date	Sample Number	CCl_4	Freon 113	TCE	1,1-DCE	Other Compounds
39	85	10/28/98	VPSV-635	3.7	66	1.5	ND	ND
39	85	10/28/98	VPSV-636(DUP)	3.9	78	1.6	ND	ND
39	85	3/15/99	VPSV-705	ND	38	ND	ND	ND
39	85	3/15/99	VPSV-706(DUP)	ND	39	ND	ND	ND
39	85	10/11/99	VPSV-849	6.3	48	1.4	ND	ND
39	85	10/11/99	VPSV-850(DUP)	7.7	47	2.5	ND	ND
39	100	10/28/98	VPSV-637	7.9	77	3.3	ND	ND
39	100	3/15/99	VPSV-707	1.2	73	1.4	ND	ND
39	100	10/11/99	VPSV-851	9.0	46	3.3	ND	ND
39	110	10/28/98	VPSV-638	9.8	67	4.7	ND	ND
39	110	3/15/99	VPSV-708	1.8	37	3.4	ND	ND
39	110	10/11/99	VPSV-852	12	55	3.2	ND	ND
39	120	10/28/98	VPSV-639	6.5	50	10	ND	ND
39	120	3/15/99	VPSV-709	ND	7.0	15	ND	ND
39	120	10/11/99	VPSV-853	4.9	16	17	ND	ND
39	130	10/28/98	VPSV-640	6.2	50	15	ND	ND
39	130	3/15/99	VPSV-710	ND	5.2	12	ND	ND
39	130	10/11/99	VPSV-854	2.0	9.0	15	ND	ND

Notes:

bgs – Below ground surface.
DUP – Duplicate samples.
J – Estimated concentration; result exceeded calibration range.
ND – Not detected.
NS – Not sampled.
P – Sampling port plugged.
W – Sampling port inundated with water.